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Report of the individual review of the annual submission of France submitted in 2013*

* In the symbol for this document, 2013 refers to the year in which the inventory was submitted, and not to the year of publication.

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I. Introduction and summary

1. This report covers the review of the 2013 annual submission of France, coordinated by the UNFCCC secretariat, in accordance with decision 22/CMP.1. The review took place from 23 to 28 September 2013 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: generalist – Ms. Karin Kindbom (Sweden) and Mr. Newton Paciornik (Brazil); energy – Ms. Olia Glade (New Zealand), Mr. Ralph Harthan (Germany), Ms. Yuriko Hayabuchi (Japan) and Ms. Carmen Meneses Lopez (the Bolivarian Republic of Venezuela); industrial processes and solvent and other product use – Mr. Predrag Novosel (Montenegro) and Mr. Jos Olivier (the Netherlands); agriculture – Mr. Bernard Hyde (Ireland), Mr. Asaye Ketema (Ethiopia) and Mr. Jacques Kouazounde (Benin); land use, land-use change and forestry (LULUCF) – Mr. Sandro Federici (San Marino) and Ms. Valentyna Slivinska (Ukraine); and waste – Ms. Maryna Bereznytska (Ukraine) and Ms. Violeta Hristova (Bulgaria). Mr. Federici and Ms. Kindbom were the lead reviewers. The review was coordinated by Mr. Roman Payo (UNFCCC secretariat).

2. In accordance with the "Guidelines for review under Article 8 of the Kyoto Protocol" (decision 22/CMP.1) (hereinafter referred to as the Article 8 review guidelines), a draft version of this report was communicated to the Government of France, which provided comments that were considered and incorporated, as appropriate, into this final version of the report. All encouragements and recommendations in this report are for the next annual submission, unless otherwise specified. The expert review team (ERT) notes that the 2012 annual review report of France was published after the submission of the 2013 annual submission.

3. In 2011, the main greenhouse gas (GHG) in France was carbon dioxide (CO_2), accounting for 73.6 per cent of total GHG emissions[1] expressed in CO_2 equivalent (CO_2 eq), followed by nitrous oxide (N_2O) (12.4 per cent) and methane (CH_4) (10.5 per cent). Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6) collectively accounted for 3.5 per cent of the overall GHG emissions in the country. The energy sector accounted for 70.8 per cent of total GHG emissions, followed by the agriculture sector (18.9 per cent), the industrial processes sector (7.4 per cent), the waste sector (2.6 per cent) and the solvent and other product use sector (0.2 per cent). Total GHG emissions amounted to 487,212.03 Gg CO_2 eq and decreased by 12.6 per cent between the base year[2] and 2011. The ERT concludes that the description in the national inventory report (NIR) of the trends for the different gases and sectors is reasonable.

4. Tables 1 and 2 show GHG emissions from sources included in Annex A to the Kyoto Protocol (hereinafter referred to as Annex A sources), emissions and removals from the LULUCF sector under the Convention and emissions and removals from activities under Article 3, paragraph 3, and, if any, elected activities under Article 3, paragraph 4, of the Kyoto Protocol (KP-LULUCF), by gas and by sector and activity, respectively. In table 1, CO_2, CH_4 and N_2O emissions included in the rows under Annex A sources do not include emissions and removals from the LULUCF sector.

[1] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding LULUCF, unless otherwise specified.

[2] "Base year" refers to the base year under the Kyoto Protocol, which is 1990 for all gases. The base-year emissions include emissions from sources included in Annex A to the Kyoto Protocol only.

5. Additional background data on recalculations by France in the 2013 annual submission, as well as information to be included in the compilation and accounting database, can be found in annex I to this report.

Table 1

Greenhouse gas emissions from Annex A sources and emissions/removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, by gas, base year[a] to 2011

			Gg CO_2 eq								*Change (%)*
		Greenhouse gas	*Base year[a]*	*1990*	*1995*	*2000*	*2008*	*2009*	*2010*	*2011*	*Base year–2011*
Annex A sources		CO_2	397 103.58	397 103.58	396 020.28	412 744.28	397 816.12	379 178.18	387 017.46	358 545.51	-9.7
		CH_4	58 947.61	58 947.61	59 862.78	59 153.66	53 666.15	52 406.23	52 378.51	51 093.56	-13.3
		N_2O	91 311.08	91 311.08	90 121.27	78 237.65	66 202.74	62 261.58	60 092.94	60 630.65	-33.6
		HFCs	3 742.63	3 742.63	1 729.64	5 696.55	13 554.28	14 339.15	15 124.06	15 801.54	322.2
		PFCs	4 293.45	4 293.45	2 561.81	2 486.86	563.10	365.35	382.91	429.46	-90.0
		SF_6	2 272.59	2 272.59	2 635.51	2 252.06	1 091.22	931.05	866.19	711.31	-68.7
KP-LULUCF	Article 3.3[b]	CO_2					7 309.31	6 016.95	2 959.20	2 653.97	
		CH_4					176.79	170.11	136.57	136.95	
		N_2O					72.53	76.29	75.10	78.33	
	Article 3.4[c]	CO_2	NA				-64 241.74	-54 405.01	-47 369.18	-57 082.95	NA
		CH_4	NA				539.08	565.52	625.10	555.82	NA
		N_2O	NA				57.42	64.36	68.75	62.09	NA

Abbreviations: Annex A sources = sources included in Annex A to the Kyoto Protocol, KP-LULUCF = land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, NA = not applicable.

[a] "Base year" for Annex A sources refers to the base year under the Kyoto Protocol, which is 1990 for all gases. The "base year" for cropland management, grazing land management and revegetation under Article 3, paragraph 4, of the Kyoto Protocol is 1990. For activities under Article 3, paragraph 3, of the Kyoto Protocol and forest management under Article 3, paragraph 4, only the inventory years of the commitment period must be reported.

[b] Activities under Article 3, paragraph 3, of the Kyoto Protocol, namely afforestation and reforestation, and deforestation.

[c] Elected activities under Article 3, paragraph 4, of the Kyoto Protocol, including forest management, cropland management, grazing land management and revegetation.

Table 2
Greenhouse gas emissions by sector and activity, base year[a] to 2011

			Gg CO_2-eq								*Change (%)*
		Sector	*Base year[a]*	*1990*	*1995*	*2000*	*2008*	*2009*	*2010*	*2011*	*Base year–2011*
Annex A		Energy	383 415.10	383 415.10	384 150.36	399 635.76	382 951.31	366 752.92	373 070.44	344 896.61	-10.0
		Industrial processes	59 173.36	59 173.36	56 413.61	44 084.88	39 984.72	36 898.94	37 655.39	36 255.74	-38.7
		Solvent and other product use	2 068.02	2 068.02	1 815.22	1 831.72	1 185.92	1 050.35	1 094.08	1 120.38	-45.8
		Agriculture	100 382.50	100 382.50	96 009.08	100 178.20	95 105.79	91 682.91	90 870.55	92 154.11	-8.2
		Waste	12 631.96	12 631.96	14 543.01	14 840.50	13 665.87	13 096.41	13 171.62	12 785.18	1.2
		LULUCF	NA	22 792.31	28 500.02	26 430.45	47 683.01	38 666.14	34 540.00	44 506.94	NA
		Total (with LULUCF)	**NA**	**534 878.64**	**524 431.26**	**534 140.61**	**485 210.60**	**470 815.39**	**481 322.07**	**442 705.09**	**NA**
		Total (without LULUCF)	**557 670.95**	**557 670.95**	**552 931.28**	**560 571.06**	**532 893.61**	**509 481.53**	**515 862.07**	**487 212.03**	**-12.6**
		Other[b]	NA	NO	NO	NO	NO	NO	NO	NO	NA
KP-LULUCF	Article 3.3[c]	Afforestation and reforestation					-7 235.26	-7 633.57	-8 006.40	-8 375.87	
		Deforestation					14 793.90	13 896.91	11 177.27	11 245.11	
		Total (3.3)					**7 558.64**	**6 263.34**	**3 170.87**	**2 869.24**	
	Article 3.4[d]	Forest management					-63 645.24	-53 775.13	-46 675.34	-56 465.04	
		Cropland management	NA				NA	NA	NA	NA	NA
		Grazing land management	NA				NA	NA	NA	NA	NA
		Revegetation	NA				NA	NA	NA	NA	NA
		Total (3.4)	**NA**				**-63 645.24**	**-53 775.13**	**-46 675.34**	**-56 465.04**	**NA**

Abbreviations: KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NA = not applicable, NO = not occurring.

[a] "Base year" for sources included in Annex A to the Kyoto Protocol refers to the base year under the Kyoto Protocol, which is 1990 for all gases. The "base year" for cropland management, grazing land management and revegetation under Article 3, paragraph 4, of the Kyoto Protocol is 1990. For activities under Article 3, paragraph 3, of the Kyoto Protocol and forest management under Article 3, paragraph 4, only the inventory years of the commitment period must be reported.

[b] Emissions/removals reported in the sector other (sector 7) are not included in Annex A to the Kyoto Protocol and are therefore not included in national totals.

[c] Activities under Article 3, paragraph 3, of the Kyoto Protocol, namely afforestation and reforestation, and deforestation.

[d] Elected activities under Article 3, paragraph 4, of the Kyoto Protocol, including forest management, cropland management, grazing land management and revegetation.

II. Technical assessment of the annual submission

A. Overview

1. Annual submission and other sources of information

6. The 2013 annual inventory submission was submitted on 9 April 2013; it contains two complete sets of common reporting format (CRF) tables (one for the reporting under the Convention and the other for the reporting under the Kyoto Protocol; see para. 11 below) for the period 1990–2011 and an NIR. France also submitted the information required under Article 7, paragraph 1, of the Kyoto Protocol, including information on: activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, accounting of Kyoto Protocol units, changes in the national system and in the national registry, and the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol. The standard electronic format (SEF) tables were submitted on 9 April 2013. The annual submission was submitted in accordance with decision 15/CMP.1.

7. France officially submitted revised emission estimates on 8 November and 20 December 2013 in response to the list of potential problems and further questions raised by the ERT. The values used in this report are those submitted by the Party on 20 December 2013.

8. The full list of materials used during the review is provided in annex II to this report.

2. Overall assessment of the inventory

9. Table 3 contains the ERT's overall assessment of the annual submission of France. For recommendations for improvements related to cross-cutting issues for specific categories, please see the paragraphs cross-referenced in the table.

Table 3
The expert review team's overall assessment of the annual submission

		General findings and recommendations
The expert review team's (ERT's) findings on completeness of the 2013 annual submission		See paragraph 10 regarding the completeness of the CRF tables. See paragraph 86 for LULUCF geographical completeness
Annex A sources[a]	Complete	Mandatory: None
		Non-mandatory: "NE" is reported for CH_4 and N_2O emissions from multilateral operations
Land use, land-use change[a] and forestry	Not complete	Mandatory: France reports "NO" for CO_2 emissions from organic soils (see para. 89). For category-specific recommendations, please also see paragraphs 90–98
		Non-mandatory: None
KP-LULUCF	Complete	

		General findings and recommendations
The ERT's findings on recalculations and time-series consistency in the 2013 annual submission	Generally consistent	Time-series consistency issues have been identified related to methodological changes for the entire time series for some categories in the industrial processes sector (see para. 49). Regarding recalculations, the information is not always complete (see para. 12). For additional category-specific recommendations see paragraphs 38, 39, 41, 45, 47, 51, 53, 56, 58, 61
The ERT's findings on verification and quality assurance/quality control procedures in the 2013 annual submission	Sufficient	The ERT identified inconsistencies in the NIR and between the NIR and the CRF tables (see paras. 29, 31, 65, 67, 72, 75, 83, 108, 110 and 111)
The ERT's findings on the transparency of the 2013 annual submission	Not sufficient	See paragraph 13. For additional category-specific recommendations see paragraphs 28, 29, 33, 36, 37, 47, 48, 51–53, 56–60, 62, 63, 65, 66, 68–72, 76, 77, 78, 81, 82, 88, 96, 102, 104–108, 111, 116

Abbreviations: Annex A sources = sources included in Annex A to the Kyoto Protocol, CRF = common reporting format, KP-LULUCF = land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NE = not estimated, NIR = national inventory report, NO = not occurring.

[a] The assessment of completeness by the ERT considers only the completeness of reporting of mandatory categories (i.e. categories for which methods and default emission factors are provided in the Intergovernmental Panel on Climate Change (IPCC) *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, or the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*).

10. The ERT noted that France has provided a complete set of CRF tables, except for CRF table 8(b) (explanations of recalculations). The ERT considered that CRF table 8(b) is required as part of the official annual submission in line with the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories" (hereinafter referred to as the UNFCCC reporting guidelines). The ERT noted with concern that this omission had already been identified in previous review reports. In response to questions raised by the ERT during the review, France informed the ERT that it plans to report CRF table 8(b) at least for the base year and the latest recalculated year in its 2014 annual submission. The ERT therefore strongly reiterates the recommendation made in the previous review reports that France provide CRF table 8(b) in order to ensure the comparability and completeness of its reporting.

11. France has submitted two sets of CRF tables (one under the Convention and one under the Kyoto Protocol) and just one NIR. As already identified in previous review reports, the information in the NIR is often inconsistent, referring either to the inventory under the Convention or referring to the inventory under the Kyoto Protocol. Often it is not identified in the NIR which inventory the information relates to (see paras. 28 and 102 below). The ERT reiterates the recommendation made in the previous review report that France consistently report all the information in the NIR with respect to either the CRF tables under the Convention or the CRF tables under the Kyoto Protocol. The ERT also recommends that when the information differs between the inventories the Party highlight this fact in the NIR and explain the difference transparently.

12. France included a section on recalculations (chapter 10 of the NIR) with a brief explanation and description of the main effects of the recalculations, and also provided

table 79 of annex 6 to the NIR with the resulting changes by subcategory and by gas for the years 1990 and 2010. Although the structure of the reporting is appropriate, the ERT identified that the provision of information is often insufficient. While a brief explanation of the rational for the recalculations in table 79 of the NIR (and also in CRF table 8(b)) is acceptable, the ERT considers that it should be expanded in the subcategory recalculation sections, transparently explaining the reasons for the recalculations, the impact and how time-series consistency was preserved (see paras. 25(c) and 47). In many instances the information on the column "nature of modifications" in table 79 of the NIR is wrongly completed and some recalculations are not reported (see para. 63). The ERT recommends that France improve its reporting of the recalculations by increasing the transparency of the explanations on the nature of the recalculations (methods, data), the implications and how the time-series consistency was preserved.

13. The ERT identified that often the methods, activity data (AD), parameters and sources of data are not transparently reported in the NIR (e.g. see paras. 28, 29, 33, 36, 37, 47, 48, 51–53, 56–60, 62, 63, 65, 66, 68–72, 76, 77, 78, 81, 82, 88, 96, 102, 104–108, 111 and 116). The lack of transparency has already been identified in previous review reports. In response to the recommendations made in previous review reports France has increased the number of pages of the report *Organization and methodologies for the national inventory of atmospheric emissions* (hereinafter referred to as the OMINEA[3] report) that are included as an annex to the NIR (the excerpt from the OMINEA report in the 2013 annual submission is 150 pages longer than in the 2012 submission). Although it is a helpful tool for the inventory compilation, the OMINEA report often does not contain the information needed to increase the transparency in relation to methodologies applied, sources of data, parameters and assumptions. Moreover, the OMINEA report contains a significant quantity of procedural internal information and information not related to GHG inventories, and which is not useful to the ERT or a general reader (see para. 48). The ERT recommends that France increase the transparency of its report by fully revising the NIR, by providing in its main body better descriptions of the methods used (clarifying the tier), the sources of data, emission factors (EFs) and the parameters used, as required by the method or approach selected.

3. Description of the institutional arrangements for inventory preparation, including the legal and procedural arrangements for inventory planning, preparation and management

Inventory planning

14. The NIR describes the national system for the preparation of the inventory. The Ministère de l'Écologie, du Développement durable et de l'Énergie (MEDDE) has overall responsibility for the national inventory. MEDDE coordinates with other ministries, attributes responsibilities to different institutions and organizations and has final responsibility for submitting the inventory to the UNFCCC. In response to a reiterated recommendation made in previous review reports, France included in the NIR a table containing names and responsibilities of the institutions participating in the preparation of the inventory. The ERT commends France for this improvement to the transparency of the NIR.

15. The preparation of the GHG inventory is delegated to the Centre Interprofessionnel Technique d'Etudes de la Pollution Atmosphérique (CITEPA). CITEPA collects the data from other institutions, selects the estimation methods, prepares the inventory, implements quality assurance/quality control (QA/QC) procedures and archives the inventory and

[3] Report entitled "Organisation et méthodes des inventaires nationaux des émissions atmosphériques".

related documents. The École des Mines de Paris is responsible for the estimation of the country's emissions of fluorinated gases (F-gases) and provides these emission estimates to CITEPA.

16. The Groupe de Concertation et d'Information sur les Inventaires d'Émissions (GCIIE), coordinated by MEDDE and composed of all relevant ministries, discusses the results of each annual GHG inventory, advises and approves the methodological changes and the inventory improvement plan, provides recommendations and proposes actions and research activities for the improvement of the inventory.

17. Every year GCIIE reviews the draft inventory and MEDDE revises, if necessary, the inventory before approving it and submitting it to the UNFCCC. The findings of the annual review report are incorporated, together with the findings of GCIIE, into an inventory action plan.

18. France has established a process for the official consideration and approval of the inventory, including recalculations, prior to its submission and for responding to any issues raised during the review. However, the ERT noted with concern that the national system of France has not been able to implement or respond to a number of recommendations made in previous review reports, some of which have been repeated in different review reports and some of which are strongly reiterated recommendations. Most of these recommendations are reiterated again in this report, particularly in respect to the lack of transparency of the report (see para. 13 above). Therefore, the ERT strongly recommends that France enhance its national system so that it is able to address the reiterated recommendations made in this and previous review reports.

Inventory preparation

19. Table 4 contains the ERT's assessment of France's inventory preparation process. For improvements related to specific categories, please see the paragraphs cross-referenced in the table.

Table 4
Assessment of inventory preparation by France

	General findings and recommendations
Key category analysis	
Was the key category analysis performed in accordance with the Intergovernmental Panel on Climate Change (IPCC) *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance) and the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF)?	Yes
Approach followed?	Both tier 1 and tier 2
Were additional key categories identified using a qualitative approach?	No

		General findings and recommendations
Has the Party identified key categories for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol following the guidance on establishing the relationship between the activities under the Kyoto Protocol and the associated key categories in the UNFCCC inventory?	No	The Party has identified key categories but not following the IPCC good practice guidance for LULUCF. See paragraph 20 below
Does the Party use the key category analysis to prioritize inventory improvements?	Yes	
Are there any changes to the key category analysis in the latest submission?	No	
Assessment of uncertainty analysis		
Approach followed?	Tier 1 and partially tier 2	
Was the uncertainty analysis carried out in accordance with the IPCC good practice guidance and the IPCC good practice guidance for LULUCF?	No	The level of aggregation of some subcategories is incorrect, implying correlation that cannot be justified. In consequence, uncertainty is overestimated (see para. 21). France did not report an uncertainty analysis for the KP-LULUCF sector (see para. 114) or for individual categories in the LULUCF sector (see para. 87). Elsewhere, the rationale for the uncertainty values associated with the AD and EFs are not sufficiently provided in the NIR (see para. 66)
Quantitative uncertainty (including LULUCF)	Level = 20.7% Trend = 3.7%	
Quantitative uncertainty (excluding LULUCF)	Level = 18.0% Trend = 2.1%	

Abbreviations: AD = activity data, EF = emission factor, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NIR = national inventory report.

20. France has reported results of the key category analysis for activities under Article 3, paragraphs 3 and 4 of the Kyoto Protocol in CRF table NIR-3, but the table is incorrectly completed. Only the key categories should be listed in the table. Columns "C" and "D" indicate the criteria concerning why the activity has been identified as key (not whether the category is key or not, as assumed by France). In addition, the Party has not provided information in the NIR under chapter 11.6, including instead only a reference to CRF table 7. The ERT recommends that France correct the required information in CRF table NIR-3 and provide in the NIR textual information indicating how the analysis was performed, the activities identified as key and the respectively criteria used.

21. France has reported results of a tier 1 uncertainty analysis. It has also implemented a partial tier 2 analysis for the subcategory N_2O emissions from agriculture soils, the results of which have been incorporated in the tier 1 analysis. As has been already noted in previous review reports for the Party's 2010, 2011 and 2012 annual submissions, the ERT identified that the level of aggregation of the categories is higher than that recommended in the Intergovernmental Panel on Climate Change (IPCC) *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance). In line with the IPCC good practice guidance, only those categories for which there exists a correlation of the uncertainty values for AD and EFs should be aggregated, even if uncertainty values would be the same. The ERT notes that this is not usually the case for all categories aggregated in the Party's analysis (e.g. enteric fermentation, chemical industry, fugitive emissions from oil and natural gas, transport, and consumption of halocarbons and SF_6) and France did not justify these aggregations in its NIR. Likewise, the ERT noted that the LULUCF sector is included in the analysis as a single category. In consequence of these incorrect aggregations, the results of France's uncertainty analysis are likely to be overestimated. The ERT noted that, according to the previous review report, France indicated that it would disaggregate the uncertainty analysis for individual subcategories, especially when the quality of data and methodological tiers are significantly different, but the current ERT notes that the Party has not implemented these changes in the 2013 annual submission. The ERT concluded that France's analysis is not fully in line with the IPCC good practice guidance, and strongly reiterates the recommendation made in previous review reports that France prepare and report its uncertainty analysis in accordance with the IPCC good practice guidance.

Inventory management

22. France has a centralized archiving system, which includes the archiving of disaggregated EFs and AD, and documentation on how these factors and data have been generated and aggregated for the preparation of the inventory. The archived information also includes internal documentation on QA/QC procedures, external and internal reviews, and documentation on annual key categories and key category identification and planned inventory improvements. The archived information is maintained by CITEPA under the coordination of MEDDE.

4. Follow-up to previous reviews

23. France describes in chapter 10 of the NIR recalculations and planned improvements of the inventory including those in response to the review process. It also includes in annex 10 of the NIR table 81, where it describes how the recommendations made in the previous review reports have been taken into consideration. France highlights that even though the 2012 annual review report was not available at the time of the 2013 annual submission, the questions raised by the ERT during the review have been considered in the inventory improvement plan, to the extent possible. The ERT commends France for this approach and acknowledges that not all recommendations made in the previous review report could be implemented due to time constraints.

24. The ERT noted that some recommendations made in previous review reports have been addressed in the 2013 annual submission, including:

(a) The improvement of the description of the responsibilities of the institutions participating in the preparation of the inventory (see para. 14 above);

(b) The launch of a project for the development of a country-specific methodology for the estimation of N_2O emissions from agricultural soils (see para. 80 below).

25. However, many reiterated recommendations have not yet been implemented. The ERT recommends that France fully implement the recommendations made in the previous review reports. In particular, the ERT recommends that France:

(a) Complete CRF table 8(b) for the entire time series (see para. 10 above);

(b) Consistently report all the information in the NIR with respect to either the CRF tables under the Convention or the CRF tables under the Kyoto Protocol and, when the information differs between the inventories highlight this fact in the NIR, explaining transparently the differences (see para. 11 above);

(c) Report clearly, in the sectoral sections and at the subcategory level, the nature of recalculations (changes of method, AD, EF, other), the years for which these were performed and the justification (see para. 12 above);

(d) Increase the transparency of its report by fully revising the NIR, including in its main body providing better descriptions of methods used (clarifying tier), sources of data, EFs and parameters (see para. 13 above);

(e) Ensure the consistency of the time series when using data from the European Union Emissions Trading System (EU ETS) for civil aviation (see para. 41 below);

(f) Obtain country-specific values for the carbon content of diesel oil and gasoline sold in France for the estimation of the relevant CO_2 emissions from road transportation (see para. 42 below);

(g) Improve QA/QC procedures to minimize the inconsistencies of the information reported in the CRF tables, the KP-LULUCF CRF tables and in the NIR for the supplementary information regarding KP-LULUCF (see para. 111 below).

5. Areas for further improvement identified by the expert review team

26. During the review, the ERT identified a number of areas for improvement, including some related to specific categories. These are listed in the relevant chapters of this report and in table 9.

B. Energy

1. Sector overview

27. The energy sector is the main sector in the GHG inventory of France. In 2011, emissions from the energy sector amounted to 344,896.61 Gg CO_2 eq, or 70.8 per cent of total GHG emissions. Since 1990, emissions have decreased by 10.0 per cent. The key drivers for the fall in emissions are the decrease of emissions in the categories: manufacturing industries and construction, owing to a general decrease of energy consumption (especially as a result of the economic crisis in 2008–2009) and an increased use of natural gas and biomass at the expense of solid and liquid fossil fuels; energy industries, owing to an increased share of natural gas and biomass and a decrease in the use of solid fossil fuels; and other sectors, owing to, among other things, an increased share of natural gas, especially in the residential and commercial/institutional subcategories. The decreases were partially offset by an increase in emissions from transport (especially from road transportation). Within the sector, 38.4 per cent of the emissions were from transport, followed by 26.1 per cent from other sectors, 19.0 per cent from manufacturing industries and construction and 15.4 per cent from energy industries. Fugitive emissions from fuels accounted for the remaining 1.3 per cent.

28. In the two previous review reports it was identified that the geographical coverage of the AD provided in the NIR for the energy sector was not always consistent and, in some cases, it was not completely transparent as to which CRF tables (submitted under the Convention or under the Kyoto Protocol) the data referred. The ERT noted that AD reported in the NIR refer to mainland France, French overseas territories or both and that, as indicated in previous review reports, in many cases it was not clear whether reported data refer to the reporting under the Convention or under the Kyoto Protocol (for France, some of the overseas territories are not included under the Kyoto Protocol, but only under the Convention). In response to a question raised by the ERT during the review, France explained what data sources are used for the different territories and explained the procedure for aggregating them to AD under the Convention and under the Kyoto Protocol. As an example, a graph for fuel consumption for different geographical aggregations was presented to the ERT. The ERT recommends that the Party provide in the NIR additional explanation on data sources used and on the algorithm for data aggregation as well as tables and graphs for data under the Convention and under the Kyoto Protocol. The ERT reiterates the strong recommendation made in the previous review report that France refer to the CRF tables submitted under the Kyoto Protocol or, when this is not the case, clearly indicate to which territorial aggregation the information refers.

29. The ERT also noted that AD presented in the NIR were often reported in different units from those in the CRF tables. For instance, in some cases fuel consumption was reported in million tonnes of oil equivalent or kilotonnes in the NIR. This makes it difficult for the ERT to compare AD reported in the NIR with the values reported in the CRF tables. The ERT recommends that the Party improve the transparency of its data by using the same units in the NIR as in the CRF tables.

2. Reference and sectoral approaches

30. Table 5 provides a review of the information reported under the reference approach and the sectoral approach, as well as comparisons with other sources of international data. Issues identified in table 5 are more fully elaborated in paragraphs 31–37 below.

Table 5
Review of reference and sectoral approaches

		Paragraph cross-references
Difference between the reference approach and the sectoral approach	Energy consumption: 109.76 PJ, 2.29% CO_2 emissions: 77.47 Gg CO_2 eq, 0.02%	31
Are differences between the reference approach and the sector approach adequately explained in the NIR and the CRF tables?	Yes	
Are differences with international statistics adequately explained?	No	33
Is reporting of bunker fuels in accordance with the UNFCCC reporting guidelines?	Yes	
Is reporting of feedstocks and non-energy use of fuels in accordance with the UNFCCC reporting guidelines?	No	36, 37

Abbreviations: CRF = common reporting format, NIR = national inventory report, UNFCCC reporting guidelines = "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories"

Comparison of the reference approach with the sectoral approach and international statistics

31. In 2011, according to CRF table 1.A(c) submitted under the Kyoto Protocol, CO_2 emissions estimated following the reference approach amounted to 335,009.02 Gg CO_2 in comparison with 334,931.55 Gg CO_2 following the sectoral approach, which corresponds to a difference of 0.02 per cent. However, the ERT noted that emissions reported in table 22 of the NIR amount to 339,479 Gg CO_2 and 339,692 Gg CO_2 for the reference and the sectoral approaches, respectively. In response to a question raised by the ERT during the review, France explained that the table in the NIR matches the estimates reported in CRF table 1.A(c) submitted under the Convention. The ERT recommends that France include this information in the documentation box of the table submitted under the Kyoto Protocol and in the table in the NIR.

32. The NIR indicates that the differences between the reference and the sectoral approaches are, in particular, the result of problems relating to the uncertainty with regard to the assumptions about non-energy fuel use in the reference approach and the fact that other fuels such as waste or some industrial gases are not accounted for in the reference approach, but they are in the sectoral approach. No further information on the differences between the reference and the sectoral approaches is available in the CRF tables and the ERT notes that this is acceptable considering the small difference in CO_2 emissions (0.02 per cent) between both approaches.

33. The ERT noted several differences between fuel consumption in the reference approach and in the International Energy Agency (IEA) statistics. For example, for gas/diesel oil exports, data in CRF table 1.A(b) for 2010 and 2011 are 28.2 per cent and 40.2 per cent lower than those reported to the IEA, respectively. In response to questions raised by the ERT during the review, France explained that the inventory compilation is often based on preliminary statistical data, whereas final data are delivered to the IEA. Other differences may arise from the use of different net calorific values. Also, data reported by the IEA generally relate to mainland France. In this regard, fuel sold from the mainland to overseas territories may be accounted as export in the IEA statistics, whereas French fuel consumption in the CRF tables relates to the mainland and overseas territories. The ERT recommends that France further improve the description of differences between international data and data used in the inventory.

International bunker fuels

34. In 2011, jet kerosene consumption for international bunkers is reported as 233,467.78 TJ in CRF table 1.C (sectoral approach), whereas based on the reference approach 245,331.68 TJ can be estimated from data reported in CRF table 1.A(b), which corresponds to a difference of 5.1 per cent. In response to a question raised by the ERT during the review, France explained that the difference may stem from different energy conversion factors and differences in geographical coverage. Regarding IEA data, the Party explained that bunker fuel consumption is estimated differently in the GHG inventory and in the IEA statistics: whereas the split between international and domestic fuel use in the inventory is based on bottom-up calculations, there is no such approach for the IEA data. Furthermore, IEA data may exclude consumption by overseas territories. The ERT recommends that France include this information in its NIR.

Feedstocks and non-energy use of fuels

35. In response to a question raised by the ERT during the review, the Party explained that it had further harmonized the data used in the inventory and the national energy balance, especially for emissions from iron and steel production and steam cracking. A description of how fuel used in steam crackers is differentiated between energy uses and non-energy uses is included in the NIR.

36. The NIR (page 85) indicates that a study by the statistical office on non-energy use of fuel is available, which allows France to better understand which fuels are used for non-energy purposes. In response to a question raised by the ERT during the review, the Party explained that the study provides detailed data for the period 2005–2008. For the period 2009–2011, a similar study is used, which is based on a bottom-up approach. For the period 1990–2004, natural gas consumption is based on the French statistics and data for the share of non-energy fuel use are derived from the study. The ERT recommends that France further improve the description of how non-energy fuel use is estimated over the time series.

37. The ERT noted that the reporting of non-energy fuel use in CRF table 1.A(d) has not improved since the last annual submission and is not transparent: information on associated CO_2 emissions and where these emissions are allocated is still not provided. The ERT reiterates the recommendation made in the previous review report that France improve the transparency and completeness of the information reported in CRF table 1.A(d).

3. Key categories

Stationary combustion: gaseous fuels, biomass and other fuels – CO_2, CH_4

38. The ERT noted that the implied emission factor (IEF) for CH_4 emissions from gaseous fuels in energy industries has fallen sharply between 1993 and 1994 (from 98.7 kg/TJ to 3.7 kg/TJ) and has remained at a low level since then. In response to a question raised by the ERT during the review, France explained that this decrease stems from a misallocation of CH_4 emissions in the period 1990–1993 between petroleum refining and fugitive emissions from natural gas and venting for a plant extracting natural gas. Total CH_4 emissions of the site are available for the entire series 1990–2011, but not the split between combustion and fugitive emissions. The Party used a different allocation in 1990–1993 than in 1994–2011. The ERT recommends that the Party address this inconsistency and explain any recalculations, including methodology, AD and EFs, in its NIR.

39. For public electricity and heat production, the ERT noted that a constant biogenic share of 58 per cent is used since 2007 for waste incinerated with energy recovery. The ERT found that the biogenic share may be further decreasing due to the implementation of waste policies, such as those relating to composting, which would influence the share of fossil emissions reported in the GHG inventory. The ERT recommends that France update the time series of the biogenic share of waste (see para. 108 below) and explain any recalculations in its NIR.

40. The ERT noted that the IEFs for CO_2, CH_4 and N_2O for emissions from biomass use in agriculture/forestry/fisheries dropped sharply from 2010 to 2011 (e.g. for CO_2 from 90.9 t/TJ to 78.2 t/TJ). In response to a question raised by the ERT during the review, the Party explained that this was owing to a change in the French regulation regarding fuels for off-road and machinery engines in response to the European directive 2009/30/CE.[4] Until

[4] The European Union directive 2009/30/EC of 23 April 2009 amending directive 98/70/EC regarding the specification of petrol, diesel and gas oil and introducing a mechanism to monitor and reduce

2011, the fuel used in agricultural mobile engines was "gas oil" which differs from "road diesel oil" regarding the biofuel content. In 2011, this "gas oil" was gradually replaced by "off-road diesel oil" which is similar to road diesel oil in terms of biofuel content. In 2012, only "off-road diesel oil" is used by off-road and machinery engines. In consequence, the amount of biomass used increased significantly in 2011 because of the change in the fuel composition. In previous years, biomass use in the sector was dominated by wood. The drop in the IEFs can be explained by the different EFs for biofuel and wood (for instance 67.51 kg CO_2/GJ for biofuel and 92 kg CO_2/GJ for wood). The ERT recommends that the Party include this information, including the changes in fuel composition and resulting changes in the IEFs, in its NIR.

Civil aviation: liquid fuels – CO_2, CH_4 and N_2O[5]

41. The NIR (page 117) indicates that the estimation of GHG emissions from civil aviation may be further improved in the Party's next annual submission by using fuel consumption data reported under the EU ETS starting from 2012. In response to a question raised by the ERT during the review, France explained that these planned improvements are still pending and may take more time for implementation than initially foreseen and that they would be implemented in the 2015 annual submission. The ERT commends France for its efforts to increase the accuracy of the emissions from civil aviation and reiterates the recommendation made in the previous review report that the Party ensure the consistency of the time series when using data from the EU ETS for civil aviation.

Road transportation: liquid and gaseous fuels – CO_2

42. The ERT noted that the CO_2 EFs for diesel oil and gasoline used in the 2013 annual submission are the same as those in the 2012 and 2011 annual submissions. The ERT also noted the recommendations made in the previous review report that France obtain country-specific values for the carbon content of the diesel oil and gasoline sold in France (and update the EFs accordingly). In response to a question raised by the ERT during the review, the Party explained that it is discussing this issue with French and European experts, but no information is available as yet. The Party also explained that information may be sourced from a public research institution (IFP Energies Nouvelles). However, the Party indicated that it is not yet clear whether these data may become available or may need to be estimated. The ERT commends France for its ongoing efforts to resolve this issue and reiterates the strong recommendations made in previous review reports that France obtain country-specific values for the carbon content of the diesel oil and gasoline sold in France for the estimation of the relevant CO_2 emissions.

43. The ERT noted that for road transportation, AD and GHG emissions from gaseous fuels used in road transportation are reported as not occurring ("NO") in CRF table 1.A(a). In response to a question raised by the ERT during the review, the Party clarified that natural gas is used in road transportation and that this natural gas consumption is available in the energy statistics. During the review, the Party estimated these emissions and explained that corresponding estimates would be included in the next inventory submission, but the Party did not officially submit revised estimates. The ERT therefore considered that the GHG emissions from gaseous fuels used in road transportation were potentially underestimated and decided to include the issue in the list of potential problems and further questions raised by the ERT. In response to the list of potential problems, France submitted

greenhouse gas emissions and amending directive 1999/32/EC regarding the specification of fuel used by inland waterway vessels and repealing directive 93/12/EEC.

[5] Not all emissions related to all gases under this category are key categories, particularly CH_4 and N_2O emissions. However, since the issues related to this category are discussed as a whole, the individual gases are not assessed in separate sections.

revised estimates using country-specific CO_2 and N_2O EFs and the default CH_4 EF from the IPCC good practice guidance. The ERT considers that the potential underestimation has been resolved. The ERT recommends that the Party describe the chosen approach, including data sources and assumptions used, in its NIR.

Oil and natural gas: CO_2, CH_4, N_2O[6]

44. The ERT noted that CO_2 and CH_4 emissions from oil transport are reported as not applicable ("NA") in CRF table 1.B.2. However, corresponding AD are reported in the same table. In response to a question raised by the ERT during the review, France provided estimates for CO_2 and CH_4 emissions based on national statistics and EFs included in the IPCC good practice guidance and explained that this issue would be further discussed with the French petroleum federation, but the Party did not officially submit revised estimates. The ERT therefore considered that the CO_2 and CH_4 emissions from oil transport are potentially underestimated and decided to include this issue in the list of potential problems and further questions raised by the ERT. In response to the list of potential problems, the Party officially submitted revised estimates using default EFs from the IPCC good practice guidance. The ERT considers that the potential underestimation has been resolved. The ERT recommends that the Party include a description of the changes, including the chosen approach, data sources and assumptions used, in its NIR.

45. The ERT noted that recalculations of fugitive emissions (CO_2, CH_4 and N_2O) from oil refining and storage made due to the use of EFs from the EU ETS were significant (for example, a decrease of 11.0 per cent for CO_2 emissions for 2010). In response to a question raised by the ERT during the review, France explained that the decrease in emissions was due to a reporting mistake (fugitive emissions from one refinery plant were not included). From the explanations provided, the ERT concluded that the recalculated CO_2, CH_4 and N_2O emissions from oil refining and storage are potentially underestimated and decided to include the issue in the list of potential problems and further issues raised by the ERT. In response to the list of potential problems, the Party officially submitted revised estimates that considered the emissions from the previously omitted plant. The ERT considers that the potential underestimation has been resolved. The ERT recommends that the Party include a description of the changes, including the chosen approach, data sources and assumptions used, in its NIR.

C. Industrial processes and solvent and other product use

1. Sector overview

46. In 2011, emissions from the industrial processes sector amounted to 36,255.74 $GgCO_2$ eq, or 7.4 per cent of total GHG emissions, and emissions from the solvent and other product use sector amounted to 1,120.38 $GgCO_2eq$, or 0.2 per cent of total GHG emissions. Since the base year, emissions have decreased by 38.7 per cent in the industrial processes sector, and decreased by 45.8 per cent in the solvent and other product use sector. The key drivers for the fall in emissions in the industrial processes sector are the installation of N_2O abatement measures in the production of nitric acid, glyoxylic acid and adipic acid, and the decrease in production of mineral products, ammonia and metals. Within the industrial processes sector, 45.6 per cent of the emissions were from consumption of halocarbons and SF_6, followed by 33.8 per cent from mineral products,

[6] Not all emissions related to all gases under this category are key categories, particularly CH_4 and N_2O emissions. However, since the issues related to this category are discussed as a whole, the individual gases are not assessed in separate sections.

11.3 per cent from metal production and 9.0 per cent from chemical industry. The remaining 0.3 per cent were from production of halocarbons and SF_6.

47. The rationales for the recalculations are only briefly described in the NIR, and CRF table 8(b) is not completed. The explanations do not address the time-series consistency and the impact of the recalculations is only reported in the NIR for 1990 and 2010 (annex 6 to the NIR, page 496). In response to a question raised by the ERT during the review, France provided most of the requested information for the recalculations of particular categories and indicated that, for the next submission, the explanations of the recalculations will be improved within the recalculations section in the sectoral chapters. The ERT reiterates the recommendation made in the previous review report that France report clearly, at the subcategory level, the nature of the recalculations (changes of method, AD, EF, other), the years for which they were performed, the justification (as required by the IPCC good practice guidance) and a table with the impact of the recalculations at subcategory level for the entire time series.

48. The ERT noted that most of the recommendations made in the previous review report that France improve the transparency of the methodological descriptions in the NIR are not implemented. For example, many references in chapters 4 and 5 of the NIR are given in annex III to the NIR, where the complete OMINEA report is included (without a table of contents or even page numbers). The ERT considers that, for the industrial processes sector, the OMINEA report contains a significant amount of information unrelated to GHGs (e.g. information on other air pollutant emissions) and information that is not required by the UNFCCC reporting guidelines. The ERT strongly reiterates the recommendation made in the previous review report that the Party continue to assess the distribution of information between the OMINEA report and the main body of the NIR, in order to enhance the transparency of its reporting. Specifically, for the industrial processes sector, the ERT recommends that the Party add to chapter 4 and 5 of the NIR, where relevant, information on methodologies, EFs and sources of AD, as required by the IPCC good practice guidance and the UNFCCC reporting guidelines.

49. The ERT noted that for some categories in the industrial process sector different data sources are used for different periods and different methodologies/tiers are used for different periods. In some of these cases, information on the time-series consistency is missing, or is not always up to date or contradicts the information provided during the review. The ERT recommends that France include, where applicable, information on how the consistency of the time series is ensured when different data sources or methodologies are used to estimate emissions for a category for different periods of time.

50. The ERT considers that confidentiality continues to be a concern for transparency in this sector where the AD and emissions for some categories are reported as confidential. For example, AD and emissions for soda ash production and use, adipic acid production, ferroalloys production and aluminium production are reported as "C" (confidential) in CRF table 2(I).A-G. The ERT reiterates the recommendation made in the previous review report that France provide more detailed data on methodologies and data sources for the AD and EFs used for reporting these emissions, even for categories considered confidential by the Party.

2. Key categories

Cement production – CO_2

51. The ERT noted that the transparency of the NIR continues to be limited particularly regarding a description of the number of plants that apply the tier 2 or tier 3 methodologies, information regarding EFs and AD disaggregated by the type of cement, and the share of non-carbonate carbon and cement kiln dust in the IEF. In response to a question raised by

the ERT during the review, France provided more complete information about these issues. The ERT recommends that the Party complete the information on the methodological tiers used over time and data sources for all years, including the share of non-carbonate carbon and cement kiln dust in the IEF and also recommends that the Party assess time-series consistency due to the use of different methods and report on this assessment in the NIR.

Ammonia production – CO_2

52. The ERT commends France for improving the accuracy of its reporting of this category by moving from a tier 1a (production-based) to a tier 1b (gas consumption-based) methodology. The ERT noted that as a result of this recalculation, emissions were revised downwards (e.g. for 2010, CO_2 emissions decreased from 1,438.56 Gg to 1,215.92 Gg). In response to a question raised by the ERT during the review, the Party explained that CO_2 emissions are calculated by mass balance and that data on natural gas consumption are provided on a yearly basis by each plant. The Party also explained that the calculated IEF is always higher than the IPCC default EF of 56.1 kg CO_2/GJ given in table 1-1 of the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the Revised 1996 IPCC Guidelines). The ERT recommends that the Party include information on methodologies and data sources as provided during the review in the relevant sections of the industrial processes chapter of the NIR.

Aluminium production – CO_2, PFCs

53. France has made recalculations to the CO_2 emissions in this category for 2005–2010, because new data became available. In response to a question raised by the ERT during the review, the Party explained that, in the recalculations, the source of data used to calculate CO_2 emissions for the period 2005-2011 has changed. The plant has provided CO_2 emissions separated by processes and combustion and has also included industrial process emissions arising from anode production and baking in situ (petroleum coke and pitch are used as raw material) and anode consumption. Emissions due to the consumption of fuels are allocated to the energy sector. The ERT recommends that the Party complete the information on the methodological tiers and data sources for all years as provided during the review and also recommends that the Party describe how it ensures time-series consistency.

54. The ERT noted that the NIR does not report AD and the calculated IEF for CO_2 after 2009 due to confidentiality. AD for aluminium production are presented for 1990–2008 in the NIR (figure 39, page 142) and the IEF for CO_2 is reported in the NIR (table 49, page 144) for the years 1990, 1995, 2005 and 2008. The ERT concludes that although the AD are reported as confidential from 2009 onwards in the national statistics, production statistics are published and publicly available.[7] Therefore, to enable assessment of the time-series consistency of the IEF of CO_2 and PFCs for recent years, the ERT recommends that France reassess the confidentiality of the AD, with the aim of reporting AD for all years.

55. As noted in the previous review report, since 2009 the ratio of tetrafluoromethane (CF_4) to hexafluoroethane (C_2F_6) emissions has increased substantially, from an average value of 4.33 in the period 1990–2008 to 14.87 in 2009 and 15.28 in 2010. The ERT reiterates the recommendation made in the previous review report that France explain the changes in the ratio of CF_4 to C_2F_6 emissions and in the methodologies applied to estimate emissions for this category.

[7] See Association Française de l'Aluminium (<http://www.aluminium.fr/industrie/industrie-chiffres >) and United States Geological Survey (USGS). (<http://minerals.usgs.gov/minerals/pubs/commodity/aluminum>).

Consumption of halocarbons and SF_6 – HFCs and PFCs

56. France has made a recalculation for HFC emissions from refrigeration and air-conditioning equipment. In response to a question raised by the ERT during the review regarding the rationale for the recalculation, the Party explained that the recalculation is the result of the refinement of the method of estimation of HFC emissions for refrigeration and air-conditioning equipment and the inclusion of new sources, especially the quantities of HFC emitted during the recovery of the remaining quantities in the refrigerant containers ("heels"). The Party considers that this recalculation is an improvement in terms of completeness and accuracy. The ERT agrees, but recommends that the Party include in the relevant sections of the industrial processes chapter of its NIR more information on this recalculation, including the complete list of gases that were added, in which subcategory they were reported and for which years, and more complete information on the methodological tiers used over time and data sources for all years, as provided during the review.

57. The ERT noted that France reports disposal emissions from most subcategories of this category in CRF table 2(II).F, but the AD (amount of fluid remaining in products at decommissioning) and the disposal loss factor are reported as "NA" or "NO" for all subcategories except for fire extinguishers. In response to a question raised by the ERT during the review, France explained how it estimates disposal emissions and provided information about the values of recovery efficiency. The ERT recommends that France include in the relevant sections of the industrial processes chapter of its NIR information on the methodologies, data sources for AD and EFs (default or country-specific EFs), recovery efficiency and other parameters used to estimate F-gas emissions. The ERT also recommends that the Party complete the missing information in CRF table 2.(II).F for the relevant subcategories.

58. France has made a recalculation for aerosols, but the ERT noted that the NIR does not provide a detailed description of the old and new method and the data sources selected for this recalculation. In response to a question raised by the ERT during the review, the Party explained that the recalculation is only for the "other aerosols" (which are reported in another subcategory) and not metered dose inhalers. France also explained that the new method to estimate emissions from HFC use (in systems in operation) is based on the amount of HFC used to fill these systems in France. This amount is provided annually by the French aerosol federation (CFA). France subtracted amounts emitted during "filled into new manufactured products" to avoid double counting. To estimate the total French market, import and export of products are also taken into account. Based on CFA data surveys, this quantity (imports minus exports) is estimated at 15 per cent of the French production. Therefore the total French market is equal to the French production multiplied by 1.15. The ERT recommends that the Party include information on the data sources for AD for all years, as provided during the review, in the relevant sections of the industrial processes chapter of its NIR.

59. For aerosols/metered dose inhalers, France continues to report HFC emissions due to the production of aerosols under the product-life emissions, without appropriate justification in the NIR. The ERT reiterates the recommendation made in the previous review report that France improve the transparency of the methodology used for aerosols/metered dose inhalers in its NIR.

60. France continues to use a tier 1a method to estimate potential emissions, thereby not taking into account F-gases in products. In response to questions raised by the ERT during the review, France commented that the new survey planned by the Agency for the

Environment and Energy Management (ADEME[8]) about fire extinguishers, solvents and electrical equipment was not available in 2013. The ERT encourages France to report on the outcome of the inquiry, when available.

61. The ERT noted that France reports SF_6 emissions for the subcategory other (consumption of halocarbons and SF_6) only from the use of SF_6 in sport shoes until 2000 and as "NO" from 2001 onwards. The ERT also noted that, according to the IPCC good practice guidance (page 3.63), there are other sources of emissions for this category, including: gas-air tracer in research and leak detectors; medical purposes; equipment used in accelerators, lasers and night vision goggles; sound-proof windows; applications utilizing its adiabatic property (e.g. tennis balls); and military applications. The IPCC good practice guidance provides a decision tree for identifying sources (fig. 3.8) and calculation methods for SF_6 emissions in this subcategory (equations 3.22 to 3.26). The ERT further noted that neighbouring countries (Belgium and Switzerland) do report SF_6 emissions in this subcategory for all years of the time series. In addition, the ERT notes that France has airborne warning and control system (AWACS) aircraft[9] and that these planes are a source of SF_6 emissions. The ERT considers that the SF_6 emissions from the use of AWACS aircraft are potentially underestimated and that it is very unlikely that France has no other uses of SF_6 apart from the use in AWACS aircraft, and that, therefore, these additional SF_6 emissions are also potentially underestimated from 2001 onwards. The ERT included these issues in the list of potential problems and further questions raised by the ERT. In its response to this list, France submitted revised estimates that include SF_6 emissions for the following applications: AWACS military aircraft for 1991–2011 (there was no AWACS aircraft in France in 1990); accelerators; research/university; medical applications (radiotherapy); industrial applications (cables production and vacuum tube production); and research (SF_6 used for the tests of fluid movements in order to know the behaviour of natural gas in liquefied natural gas terminals). Other possible sources of SF_6 in accordance with French research do not exist. The ERT considers that the potential underestimation has been resolved. The ERT recommends that the Party include detailed information about this recalculation in its NIR.

3. Non-key categories

Other (chemical industry) – CO_2

62. In response to recommendations made in the previous review report related to CO_2 emissions from phthalic anhydride production, France added a methodological description in the NIR (annex 3, section "OMINEA 2B5 other organic chemistry production"). The ERT considers that the NIR 2013, section 4.3.2, does not mention this subcategory under other (chemical industry) and there was no indication in the industrial processes chapter that information on the methodology was provided in annex III. The ERT also considers that in the NIR (part 2, annex III, page 65) some text is provided noting that the underlying data are confidential, but even if the AD and EFs are confidential, the source of CO_2 is not described, nor is the methodology. The ERT therefore reiterates the recommendation made in the previous review report that France provide more information in the NIR on the EFs and AD.

63. The ERT noted that the Party made recalculations for the production of hydrogen (reported under "other non-specified") with CO_2 emissions increased by 297 per cent for the year 2010 (NIR table 79, annex 6) without further justification. In response to a

[8] Agence de l'Environnement et de la Maîtrise de l'Energie.

[9] See <http://www.defense.gouv.fr/air/actus-air/50-000-heures-de-vol-pour-les-awacs-francais> and <http://boeing.mediaroom.com/index.php?s=20295&item=128710>.

question raised by the ERT during the review on whether this recalculation is a new category or essentially a reallocation. France commented that CO_2 emissions for this activity were not taken into account in the industrial processes sector in the previous annual submission and that related natural gas consumption was considered as energy use in industrial combustion. In order to improve the accuracy of the French inventory, the Party has considered emissions from hydrogen production as new in the subcategory other (chemical industry). France also explained that the treatment of non-energy use of natural gas has been completely revised in the 2013 annual submission and that this fact can be observed in the natural gas consumption decrease for its reporting of manufacturing industries and construction between the 2012 and 2013 annual submissions. The ERT recognizes that the changes in emissions are likely due only to a reallocation of natural gas consumption, but in order to ensure that the inventory is neither over- nor underestimated, the ERT recommends that the Party include key information on where and how feedstock uses of natural gas leading to CO_2 emissions are accounted for in the energy and industrial processes sectors.

D. Agriculture

1. Sector overview

64. In 2011, emissions from the agriculture sector amounted to 92,154.11 Gg CO_2 eq, or 18.9 per cent of total GHG emissions. Since 1990, emissions have decreased by 8.2 per cent. The key drivers for the fall in emissions are the reduction in N_2O emissions from agriculture soils caused by the decrease in the quantity of synthetic fertilizer applied to agriculture soils and the decrease in CH_4 emissions from enteric fermentation resulting from the decline in the populations of cattle and sheep. Within the sector, 53.5 per cent of the emissions were from agriculture soils, followed by 30.5 per cent from enteric fermentation, 15.9 per cent from manure management and 0.1 per cent from rice cultivation. The remaining 0.03 per cent were from field burning of agricultural residues.

65. The ERT noted issues related to transparency on: the reporting on the tiers of methodologies used to estimate N_2O and CH_4 emissions in the agriculture sector for all key categories; the lack of references for the uncertainties of the livestock population and N_2O EF from manure management; and the lack of transparency when explaining the recalculations. Regarding the reporting of the tiers of the methodologies used: for enteric fermentation, tiers 2 and 3 are reported in the NIR (page 160) but tier 3 is reported in CRF table summary 3; for manure management, tiers 1 and 2 are reported in the NIR (page 162) but tier 2 is reported in CRF table summary 3; for agriculture soils, tier 1a is reported in the NIR (page 166) but tier 1b is reported for indirect emissions of N_2O also in the NIR (annex 3, "OMINEA 4D agriculture soils GES/2") and tiers 1 and 2 for the same category are reported in CRF table summary 3. In response to a question raised by the ERT during the review regarding methodological tiers, France indicated that a country-specific tier 2 methodology is used for enteric fermentation, while the IPCC good practice guidance tier 2 methodology is used for manure management and the IPCC good practice guidance tier 1 methodology is used for direct N_2O and the tier 1b methodology is used for indirect N_2O from agriculture soils. The ERT recommends that France improve the transparency and the consistency of the information reported, within the NIR and between the NIR and the CRF tables, including the issues identified in this paragraph regarding methodologies.

66. The ERT appreciates the efforts made by France to improve the transparency of the information on uncertainties of AD and EFs for CH_4 emissions from enteric fermentation and manure management. The Party reported that uncertainties of AD and EFs are based on expert judgement for enteric fermentation and manure management, but the background information underlying the uncertainty values is missing from the NIR. The ERT noted that

France is using a tier 2 methodology based on uncertainty data for the analysis of key categories and therefore recommends that France improve the transparency of the reporting of AD and EF uncertainties in enteric fermentation and manure management by providing at least the protocol used to obtain the expert judgement and the logical basis for the judgement, including any data taken into consideration.

67. The ERT noted some issues related to QA/QC procedures, as evidenced by: some inconsistencies of the information within the NIR and between the NIR and the CRF tables (see paras. 72, 75, 83 below); the absence of information on category-specific QC activities; and the absence of information on the cross-checking of AD with international databases, such as FAOSTAT, the database of the Food and Agriculture Organization of the United Nations (FAO).[10] The ERT also noted that the country-specific methodology used to develop the CH_4 EF for enteric fermentation for cattle has not yet been published in a peer-reviewed journal. In response to a question raised by the ERT during the review regarding this country-specific method, the Party explained that an article is being written on this country-specific methodology and that it is planned for submission to a peer-reviewed international journal by March 2014. The ERT recommends that France improve the QA/QC activities by applying and reporting on category-specific QC activities for the agriculture sector, and report on the progress of the submission of the article on the country-specific methodology to a peer-reviewed journal.

2. Key categories

Enteric fermentation – CH_4

68. The ERT welcomes the effort made by France to revise country-specific CH_4 EFs for dairy and other cattle using the equation of the study MONDFERENT[11] (NIR page 160). However, the ERT notes that there is no information on the applicability of this equation to the circumstances in France. The EF for dairy cattle is based on a relationship between CH_4 emissions and milk production but no information on the basis of the relationship between CH_4 and milk production is reported. For non-dairy cattle, the derived EF is expressed in terms of kg CH_4/head/year (table 54 of NIR), which suggests the use of data on weight but these data are reported as "NA" in the additional information to CRF table 4.A. In response to a question raised by the ERT during the review, the Party explained that the equation was developed on the basis of a large set of data (including French cases) and that a typical mass for non-dairy cattle has been used. The ERT considers that the reporting of the methodology used to develop these EFs for cattle is not completely transparent. France did not compare the country-specific methods to methodologies from the IPCC good practice guidance, but the Party plans to do so for the next annual submission. The ERT recommends that France improve the transparency of its reporting of the country-specific methods to estimate EFs from cattle, including comparing these EFs with the EFs from the IPCC good practice guidance and reporting the results of this comparison.

69. For livestock other than cattle, France used a country-specific methodology, developed by the Institut National de la Recherche Agronomique (INRA), which the ERT considers to be not completely transparent to enable comparability and replication of the country-specific method. In its 2013 annual submission, the Party did not provide the transparent evidence to show that this methodology is a more accurate way of estimating emissions and did not compare it to the methodology from the IPCC good practice guidance, consistent with recommendations made in previous review reports. For these

[10] <http://faostat3.fao.org/faostat-gateway/go/to/download/G1/GV/E>.
[11] Matière Organique Non Digestible et FERmentation ENTerique.

reasons the ERT reiterates the recommendation made in the previous review report that France assess the country-specific approach used, by comparing the EFs derived using the two methods (the country-specific methodology and the methodology from the IPCC good practice guidance), and provide a detailed description of the results, thereby improving the transparency of its reporting of the methods to estimate emissions from enteric fermentation.

70. In response to a question raised by the ERT during the review, France explained that revised country-specific CH_4 EFs will be available for livestock other than cattle at the end of 2014 or the beginning of 2015. The ERT commends the Party for this planned improvement to the EFs but reiterates the recommendation made in the previous review report that France include sufficient and transparent explanations of the country-specific methodology and EFs for this category no later than in its 2014 annual submission.

71. The ERT noted that the production of milk by dairy cattle reported in table 54 of the NIR differs from the figures reported in table 53 of the NIR submitted in 2012 regarding the years 1990–2010 without any explanation in the NIR. In response to a question raised by the ERT during the review, the Party explained that the unit used in the previous NIR was not presented but was kg/head/year, while the unit used in the NIR 2013 was litres/head/year contrary to what is written (kg/animal/year), and that the values of milk production used in the inventory and reported in the CRF tables are in kg/head/day (the conversion factor is 1.03 kg/litre). The ERT recommends that France improve the transparency of the reporting of milk production by providing the value of the conversion factor of milk production from litres to kg and report the appropriate unit for milk production.

72. The ERT noted that the livestock population reported in table 53 of the NIR, in CRF table 4.A and in the table in annex 3 to the NIR (section "4 agriculture", page "OMINEA 4 agriculture COM/4") is not consistent (e.g. for dairy cattle for 2011, CRF table 4.A reports 3,660,680, table 53 in the NIR reports 3,664,000 and the table in annex 3 reports 3,656,299). In response to a question raised by the ERT during the review, the Party explained that the figures represent different geographical coverage. The ERT recommends that the Party: improve the transparency of its reporting of the livestock population by indicating the geographical coverage of livestock population considered in the OMINEA report and in CRF table 4.A; and confirm that all emissions are reported in CRF table 4.A.

Manure management – CH_4, N_2O

73. France has used the tier 2 methodology from the IPCC good practice guidance to estimate CH_4 emissions from manure management with country-specific values for volatile solids (VS) for cattle, which is in line with the IPCC good practice guidance. The ERT commends the Party for estimating country-specific VS values. The ERT recommends that France compare the estimated EF for cattle with the default EFs from the methodology in the IPCC good practice guidance and describe the results in the NIR. For livestock other than cattle, including swine which is a significant category, the Party used the default IPCC tier 1 method, which is not in line with IPCC good practice guidance. During the review, France explained that it plans to develop country-specific VS values for livestock other than cattle. As the methodology to develop country-specific VS values is linked to digestible organic matter intake, which is used in the country-specific method for enteric CH_4 emission estimates (NIR, page 160), the ERT recommends that France develop country-specific VS values for livestock other than cattle no later than in its 2014 annual submission.

74. Typical animal mass (average) has been reported as "NA" or "NO" for all livestock in CRF table 4.B(a). In response to a question raised by the ERT during the review, France explained that typical animal mass is required to estimate VS values for non-dairy cattle

only. The ERT recommends that France include this information in its NIR and in the documentation box of CRF table 4.B(a).

75. France reported using the IPCC default value for methane conversion factor (MCF) for cold climate in its NIR (annex 3, section "4 agriculture", page "OMINEA 4B manure management GES/2") whereas the MCFs for both cold and warm climates are reported in CRF table 4.B(a). In response to a question raised by the ERT during the review regarding this inconsistency, France explained that the reporting covers the mainland and overseas territories and that the NIR provides MCF values corresponding just to the mainland (cold climate) whereas the MCFs of the mainland (cold climate) and some of overseas territories (warm climate) are included in the CRF table. The ERT recommends that France report the MCFs for both cold and warm climate in its NIR and explain why both are reported.

76. France reported that N_2O emissions were estimated using average EFs specific to each livestock category based on the equation indicated in page 164 of the NIR with country-specific nitrogen excretion rates for all livestock categories except sheep (annex 3, section "4 agriculture", page "OMINEA 4 agriculture COM/6"). In response to a question raised by the ERT during the review regarding the sources for this equation which, as reported, does not appear to correspond to an IPCC method, the Party explained that the equation is the same as equation 4.18 of the IPCC good practice guidance but expressed in a different way and used to estimate the IEFs. The Party also explained that equation 4.18 of the IPCC good practice guidance was used to estimated N_2O emissions from manure management, which was not clearly mentioned anywhere in the Party's report. The ERT considers that the report on the methodology used to estimate N_2O emissions from manure management is not transparent in the NIR. The ERT recommends that the Party improve the transparency in reporting the methodology used to estimate N_2O emissions from manure management by indicating that it used the IPCC methodology tier 2 method, reporting accurately the IPCC equation used for N_2O emissions and explaining any transformation, and indicating (with necessary background information) that the equation in page 164 of the NIR refers to the calculation of the IEF.

77. France used the IPCC tier 1 methodology to estimate N_2O emissions from manure management from sheep, but the nitrogen excretion rates reported for sheep in the NIR (16.7 kgN_2O/head/year; annex 3, section "4 agriculture", page "OMINEA 4 agriculture COM/8") differ from the default value suggested in the Revised 1996 IPCC Guidelines (16 kg N_2O/head/year from table 4.20 in volume 3). France works with four subcategories of sheep, from which two are under 1 year (young female and young male). In response to a question raised by the ERT during the review, France explained that the default IPCC nitrogen excretion rate was used and the difference between it and those values reported in the NIR was due to the application of an adjustment factor of 0.5 to young sheep under 1 year and that the variation over time of the reported excretion factors is due to the variation of the population of each sheep subcategory. The ERT recommends that the Party include this information in its NIR.

Agricultural soils – N_2O

78. The ERT noted that France imports manure from Flanders (Belgium) as indicated in the Belgian NIR (page 154). The Belgian NIR provides a link[12] to the amounts of manure exported from Flanders to France for the years 2002–2010 and indicates that the exported manure was not taken into account in the Belgium GHG inventory. However, the ERT noted that France did not report on its manure trade with Belgium. In response to a question raised by the ERT during the review, the Party acknowledged that there are fluxes (imports and exports) of manure between France and Belgium as well as Luxemburg, Switzerland,

[12] <http://www.vlm.be/lijsten/publicaties/Pages/MB_Voortgangsrapporten.aspx>.

Italy, Spain and Germany, but that it had no dataset regarding imports and exports of manure between France and these countries. France also informed the ERT that it could be assumed that for France imports of manure equal exports. The ERT considers that France has not properly justified its assumption that manure imports are balanced by manure exports. The ERT also considers that manure imported from Belgium and from other countries might likely be processed or allocated to agriculture soils and, in this case, the ERT considers that direct and indirect N_2O emissions from imported manure spread on agriculture soils were potentially underestimated. The ERT include this issue in the list of potential problems and further questions raised by the ERT. In response to this list, France submitted revised estimates that considered the net amount of manure imported. For 1991–2001, the net imports considered the exchanges with Belgium, Luxemburg, Italy and Netherlands, while for 2002–2011 only exchanges with Belgium were considered. The ERT considers that the potential underestimation has been resolved. The ERT recommends that the Party clearly explain these changes in the estimations in its NIR. The ERT also recommends that the Party investigate the possibility that manure exchanges occurred in 2002–2011 with other countries in addition to that with Belgium.

79. The ERT noted that France reported direct N_2O emissions from cultivation of histosols as "NO" in CRF table 4.D. However, the ERT noted that France reported conversion of wetlands to cropland (for example, in 2011, 14.68 kha) in CRF table 5.B and wetlands converted to grassland (in 2011, 62.90 kha) in CRF table 5.C, which means that there should be at least 77.58 kha, in the year 2011, of cultivated organic soils. The ERT also noted that for histosols, in FAOSTAT, an area of 199.08 kha for France and of 2.25 kha in French Guyana are reported. In response to a question raised by the ERT during the review, France explained that the Party will need time to analyse the issue before providing emission estimates from these soils. France also indicated that the FAOSTAT data do not have enough resolution to assess whether some of these histosols are cultivated (grassland or croplands). The ERT considers that the N_2O emissions from cultivation of histosols were potentially underestimated. The ERT included this issue in the list of potential problems and further questions raised by the ERT. In response to this list, France submitted revised estimates that considered the areas reported in the FAOSTAT database. The ERT considers that the potential underestimation has been resolved. The ERT recommends that the Party clearly explain these changes in its NIR.

80. The ERT commends France for its efforts to describe in its NIR the use of IPCC default tier 1a and tier 1b to estimate N_2O emissions from agricultural soils in response to a recommendation made in the previous review report and its effort to launch a project (NO GAS 2 project) for the development of a country-specific methodology for the estimation of N_2O emissions from agricultural soils. In response to a question raised by the ERT during the review, France explained that a country-specific methodology for the estimation of N_2O emissions from agricultural soils is already available and will be tested at the national level for the years from 1990 to 2011 from September 2013 to March 2014. The Party also explained that the integration of the results of this project in the inventory is forecasted for the 2015 annual submission. The ERT encourages France to use the methodology in the 2015 annual submission, as planned.

81. The ERT commends France for its effort to provide information on areas and crop yields used in the calculation of emissions from the subcategory crop residue. However, the equation and the combustion factor used to calculate dry matter in crop residue were not indicated. The source of dry matter and nitrogen per ha were not provided for underground crops. In response to a question raised by the ERT during the review, the Party provided the missing sources of the background data used and explained that equation 4.29 of the IPCC good practice guidance was used, but it was adapted to the data existing in France to calculate the amount of dry matter and nitrogen of crop residues left on the field. The ERT recommends that the Party improve the transparency of the estimation of these emissions,

especially regarding the methodology used to calculate dry matter in agriculture residues, by indicating that it has used the methodology from the IPCC good practice guidance, quoting accurately the equation used from that guidance and providing the values of the terms of this equation and the sources for these values.

82. The ERT commends France for its use of the fraction of livestock nitrogen excreted and deposited onto soils by grazing livestock ($Frac_{PRP}$) instead of $Frac_{GRAZ}$ for N_2O emissions from agriculture soils (NIR, annex 3, section "4 agriculture", page "OMINEA 4D agricultural soils GES/2"). However, the Party reported in CRF table 4.D that it used $Frac_{GRAZ}$, and the source of the value used for $Frac_{PRP}$ is not provided. In response to a question raised by the ERT during the review, France confirmed that it used $Frac_{PRP}$. The ERT recommends that France improve the transparency of its reporting of $Frac_{PRP}$ by providing the reference and background information of this parameter and ensuring the consistency between the NIR and the CRF tables.

3. Non-key categories

Field burning of agriculture residues – CH_4

83. France used the IPCC default methodology to estimate CH_4 emissions from field burning of agricultural residues. However, the equation reported for the estimation of these CH_4 emissions (NIR, annex 3, section "4 agriculture", page "OMINEA 4F Field residues Burning GES/1") differs from that in the Revised 1996 IPCC Guidelines (the equation in the NIR does not include the fraction of biomass oxidized) and there is no reference provided for the value of 45 per cent used for the percentage of carbon in agriculture residue dry matter. In response to a question raised by the ERT during the review, France explained that omitting the fraction of biomass oxidized is an error in the NIR but that the estimations reported in the CRF tables use the correct equation and that the value of the percentage of carbon in agriculture residue dry matter used in the estimations is 50 per cent instead of the 45 per cent reported in the NIR. The ERT recommends that the Party address the issues identified and strengthen its QC activities.

E. Land use, land-use change and forestry

1. Sector overview

84. In 2011, net removals from the LULUCF sector amounted to 44,506.94 Gg CO_2 eq. Since 1990, net removals have increased by 95.3 per cent. The key driver for the rise in removals is forest land (both subcategories) because of the decrease in wood harvesting and increases in the biomass annual increment (which were, in 1990, 1.59 Mg carbon per hectare (Mg C/ha) in forest land remaining forest land and 0.78 Mg C/ha in land converted to forest land and, in 2011, have risen to 1.79 Mg C/ha and 1.31 Mg C/ha, respectively). Within the sector, net removals occurred in forest land (64,899.72 Gg CO_2 eq), grassland (7,479.30 Gg CO_2 eq) and wetlands (3,514.54 Gg CO_2 eq), while net emissions occurred in cropland (16,567.91 Gg CO_2 eq), settlements (14,289.94 Gg CO_2 eq), other (LULUCF) (399.77 Gg CO_2 eq) and other land (129.00 Gg CO_2 eq).

85. The ERT considers that the information reported in the NIR is not sufficient to allow readers to assess and replicate the inventory. As the transparency of inventories is fundamental to the success of the process for the communication and consideration of information, the ERT recommends that France:

(a) Use the NIR outline included in the UNFCCC reporting guidelines to structure the categories in the LULUCF sector to be reported;

(b) Include a section that provides all the information needed to demonstrate the consistency of information related to land representation, including:

(i) Ancillary data used for land classification comprising: timing and methodology of data collection, and any further elaboration before their use for land classification;

(ii) The methodology applied for classifying land under land categories;

(iii) Explanations on how consistency is maintained when different sources of data and/or different methodologies are used for preparing the land representation;

(c) Report for each IPCC category, and for each additional category:

(i) The definition of the "boundaries" of the category, which elements are included and which are not (e.g. forest land includes all lands that meet the forest definition of the country);

(ii) Definitions of all elements included in the category (e.g. forest is a land that spans for a minimum area of x ha);

(iii) A description of the methodology applied, which includes: assumptions (and for each assumption its logical basis and evidence of its reliability on the condition to which it is applied); the equations applied; and the AD, EFs and carbon-stock-change factors, parameters and other ancillary data applied (noting that when an IPCC method is used information on assumptions is not needed and equations may simply be quoted);

(iv) A description of the AD and its quality including information on data collection (methodology and timing), data compilation (methodology) and uncertainties;

(v) A description of EFs and of carbon-stock-change factors, parameters and other ancillary data applied;

(vi) A description of any verification performed of the model outcomes/estimates.

86. The ERT noted that data on LULUCF categories provided in the CRF tables under the Convention and CRF tables under the Kyoto Protocol are identical, although in the CRF tables under the Convention data from overseas territories (Pays et Territoires d'Outre-Mer, PTOM) should have been included. In response to a question raised by the ERT during the review, the Party explained that carbon stocks in the territories that are under the Convention but not under the Kyoto Protocol are considered to be in equilibrium, which means that for LULUCF, currently, the CRF tables submitted under the Convention report identical values to the corresponding CRF tables submitted under the Kyoto Protocol. The Party also explained that it has plans to integrate elements from the territories that are not covered under the Kyoto Protocol, especially for Nouvelle-Calédonie that is the single significant territory for LULUCF which is not included under the Kyoto Protocol. The ERT recommends that the Party increase the completeness of its reporting under the Convention by including all overseas territories.

87. The uncertainty of the LULUCF sector was estimated at 30 per cent for AD and 50 per cent for EFs, and the combined uncertainty was 58 per cent (NIR page 179). France does not report uncertainties for individual categories, as also indicated in the previous review report. In response to a question raised by the ERT during the review, France explained that the uncertainties associated with LULUCF data are still based on expert judgement, for which justification (i.e. an elicitation protocol) is not reported in the NIR. The ERT recommends that France improve the transparency of reported information on

uncertainty analysis by including an elicitation protocol for each expert judgement. The ERT also recommends that France derive uncertainty values from available datasets (such as the national forest inventory) to replace, as far as possible, expert judgements.

88. The ERT noted that France uses extensively the notation key "NO" for carbon stock changes when a tier 1 methodology is applied, which assumes no net annual carbon stock change for a carbon pool in a land-use category (e.g. for soil organic matter in forest land remaining forest land), or where the annual carbon stock change has not been estimated (e.g. carbon stock gains for perennial biomass in land converted to cropland). The ERT also noted that France reports "0" (zero) for carbon stock changes in the soil organic carbon pool of mineral soils, for which it assumes that the pools are at an equilibrium status (e.g. for cropland remaining cropland), or for carbon stock changes in organic soils when the AD are reported as "NO". The ERT recommends that France: not report "0" (zero); use "NO" only when the activity does not occur; and, when the tier 1 methodology used assumes equilibrium of carbon stock (i.e. no annual net stock changes), use the notation key "NE" (not estimated) in the CRF tables and explain, in the documentation box of the appropriate CRF table and also in CRF table 9(a), that for the particular carbon stock change "NE" indicates that the tier 1 methodology is used. The ERT also recommends that France use the notation key "NE" for each estimate for which the carbon stock change is assumed to be negligible, instead of using the value 0, and explain, in the documentation box of the appropriate CRF table and also in CRF table 9(a), that for the particular carbon stock change "NE" corresponds to a negligible value.

89. In all land-use categories France reports the area of organic soils as "NO". However, international databases, including FAOSTAT and the Harmonized World Soil Database,[13] indicate that there are organic soils in the French territory. Further, France reports, for the year 2011, 144,320 ha of wetlands converted to other land uses (i.e. 30,000 ha of wetlands converted to forest land (CRF table 5.A), 14,680 ha of wetlands converted to cropland (CRF table 5.B), 62,900 ha of wetlands converted to grassland (CRF table 5.C), 30,100 ha of wetlands converted to settlements (CRF table 5.E) and 6,640 ha of wetlands converted to other land (CRF table 5.F)). As a consequence of not reporting organic soils, carbon stock losses from soil organic matter associated with conversion from and to wetlands are estimated by applying the IPCC default methodology for mineral soils instead of that for organic soils. The ERT recommends that France revise the information on the occurrence of organic soils for each land-use category and apply the most appropriate methodology for estimating the associated CO_2 emissions.

2. Key categories

Forest land – CO_2

90. The ERT notes that data on biomass carbon stocks are based on a forest area in mainland France (i.e. the area of the national forest inventory (NFI) that does not correspond to the area reported for forest in the GHG inventory but is covered by the survey TERUTI; NIR page 173). There is no information in the NIR to assess the impact that the difference in areas has on the statistical quantities inferred, such as whether there is a systematic deviation from true values and the magnitude of such deviation. Therefore, the ERT recommends that the Party assess whether the use of NFI data for estimating carbon stock changes on the TERUTI forest area causes any systematic impact on the biomass carbon stock changes, and that the Party ensure the accuracy of those estimates.

91. Although France considers all forest land in Guyane and all other overseas territories to be managed, France considers 5 per cent of the forest land in mainland France as

[13] <http://eusoils.jrc.ec.europa.eu/ESDB_Archive/soil_data/global.htm>.

unmanaged because it is difficult to access (NIR page 171), as confirmed by France during the review. The ERT notes that it is good practice to classify as unmanaged those lands that are not and have not been, subject to human activities, for a period long enough for carbon pools to have reached a new equilibrium level of carbon stocks. The ERT further notes that forest areas in Guyane that may be far more difficult to access (and therefore are not accessed) are reported as managed and there is no description in the NIR of any activity that occurs on Guyane forests and that does not occur in forests in mainland France. Therefore, to ensure consistency between the treatment of forests in the metropolitan territory with the treatment of forests in overseas territories, the ERT recommends that France report the entire forest area of the metropolitan territory as managed.

92. The ERT noted that France assumes that the forest areas in forest land remaining forest land in the overseas territories (namely Guyane, Martinique, La Réunion and Guadeloupe) have no annual net changes in carbon stocks in the carbon pools (reported as 0 under the subcategory "tropical – broadleaves forests"). The ERT also noted that, in 2011, the forest area of overseas territories spans 8,197.88 kha (35 per cent of the total forest area of the Party). The ERT considers that assuming no net carbon stock change in living biomass is not consistent with the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF). The ERT also noted that:

(a) According to IPCC methodologies, the carbon balance of any pool, including living biomass, of unmanaged forests could be assumed to be in equilibrium where the impact of human disturbances is avoided;

(b) Primary forest, as defined by the FAO, corresponds to unmanaged forests, providing human disturbances are avoided.

93. During the review, the Party submitted unofficially revised estimates for carbon stock changes in forests in its overseas territories, which demonstrated that these forests are a net sink of CO_2. The ERT recommends that France report those estimates, including any further revisions, in its CRF tables and associated information in its NIR.

94. France has reported CH_4 sinks on the basis of studies that indicate the absorption of CH_4 by undisturbed forest soils (NIR page 178). These sinks are reported under the category other (LULUCF) in CRF table 5, under the country-specific category "methane removal from forest soil as CO2e". However, the information reported does not clarify the scientific evidence on which the estimate is based, the methodology applied (including the justification to consider the absorption an anthropogenic process) or the origin of the CH_4 absorbed (i.e. anthropogenic or not). The ERT notes that the impact of the natural CH_4 sink of soils is already included in the calculation of the global warming potential (GWP)[14] and therefore such a sink should not be included in the GHG inventory to avoid double counting. The ERT also notes that for both aerobic methanotrophic bacteria and anaerobic methanotrophic bacteria, CO_2 is among the resulting products of CH_4 use under aerobic and anaerobic conditions.[15] The ERT recommends that France report the scientific evidence and methodology applied for estimating the CH_4 sinks, including evidence that such a natural

[14] See section 2.2.3.1 of chapter 2 of the report of Working Group I in the Second Assessment Report of the IPCC (available at <http://www.ipcc.ch/ipccreports/sar/wg_I/ipcc_sar_wg_I_full_report.pdf>) or section 8.2.3.3 of chapter 8 of the report of Working Group I in the Fifth Assessment Report of the IPCC (available at <http://www.climatechange2013.org/images/report/WG1AR5_Chapter08_FINAL.pdf>). The CH_4 sink of soil reduces the lifetime of methane in the atmosphere and therefore results in a reduced radiative forcing (calculated as GWP) across the standard time-period of 100 years.

[15] CO_2 is among the resulting products of CH_4 oxidation under aerobic ($CH_4 + O_2 \rightarrow CO_2 + H_2O$) and anaerobic ($CH_4$ + electron acceptor $\rightarrow CO_2 + H_2O$ + reduced electron acceptor) conditions.

CH_4 sink is not counted twice. The ERT also recommends that, if France intends to report such a natural CH_4 sink, the Party report the CH_4 sink and the CO_2 emissions associated with the consumption of CH_4 by bacteria in a table in the NIR instead of in the CRF tables.

95. The NIR (pages 174–177) indicates that, to ensure consistency across the entire time series, harvesting data compiled with the "model" approach and "direct" approach have been compared. During the review, France explained that the "direct" approach allows the Party to decrease strongly the uncertainty of the estimate because it avoids the use of many hypotheses (including on fuel wood and biomass expansion factor), which are very uncertain. But the ERT considers that this "direct" approach does not provide results that are suitable for annual reporting, because it compensates stock changes across a time-period, and also notes that it does not provide results for the period before 2005. Consequently the "model" approach is needed to solve these difficulties. Briefly, the "direct" approach is used to have an absolute reference and the "model" approach is used to estimate the trend and report annually wood removals. For the years where data from both approaches are available, results from both approaches are very similar, which means that results from the "model" approach are only slightly corrected. The ERT recommends that France enhance the explanation of the two methodologies, including assumptions, inferences, parameters and ancillary data, and provide a quantitative assessment to demonstrate that the use of two different methodologies does not impact the consistency of the time series of the estimates.

96. The ERT noted that the carbon stock gains per ha of the living biomass pool continuously increase from 1990 to 2011 in the category forest land remaining forest land (from 1.59 Mg C/ha in 1990 to 1.79 Mg C/ha in 2011) and land converted to forest land (from 0.78 Mg C/ha in 1990 to 1.31 Mg C/ha in 2011). The information reported in the NIR does not allow the ERT to understand the reasons for such a trend and whether or not it is a result of the change in the NFI methodologies for data collection[16] and consequently in the data quality. The ERT recommends that France expand and improve the quality of the information reported on methods and data used for estimating gains and losses of living biomass in forest land. In particular, the ERT recommends that the Party report information on how data collected by the NFI are compiled in order to be used for preparing carbon stock change estimates.

97. The ERT noted that although France applied a tier 1 methodology for estimating carbon stock changes in the dead organic matter pool in forest land remaining forest land, which assumes a 0 (zero) annual net change in stock, the carbon stock changes in relation to the decay of dead trees unremoved from forest after the big storms of 1999 and 2009 have been reported. Considering that this is a key category, the ERT recommends that the Party apply tier 2 methods for estimating all carbon stock changes in dead organic matter pools.

Cropland – CO_2

98. For cropland remaining cropland and land converted to cropland, France does not report net emissions or removals from living biomass of perennial crops, considering that emissions are equal to removals.[17] In response to a question raised by the ERT during the review, France stated that the reporting for living biomass could be improved by estimating

[16] For instance, a new NFI method was implemented in 2004 that is based on a systematic sampling grid covering the whole territory every year. The sample is defined for five years and it is divided into five annual systematic subsamples, each of which covers the whole country. Previously the NFI was covering, each year, some Départements only, and it had a returning time on the same Département of 12 years.

[17] NIR, annex 3, section "UTCF terres cultivées, pages "OMINEA 5B cropland COM/ 2" and "OMINEA 5B cropland COM/ 3".

the emissions and removals from areas of perennial crops. The ERT recommends that France report estimates for emissions and removals for living biomass of perennial crops for cropland remaining cropland and land converted to cropland, by applying at least a tier 1 methodology (sections 3.3.1.1 and 3.3.2.1 in the IPCC good practice guidance for LULUCF).

3. Non-key categories

Forest land converted to wetlands – CO_2

99. The ERT notes that, although the NIR (page 172) reports that the Petit-Saut dam covers an area of 30,000 ha, the increase in the category forest land converted to wetlands from 1993 to 1994 (starting year of the dam) is 370 ha (from 2.43 kha in 1993 to 2.80 kha in 1994). The ERT recommends that France enhance the consistency of its land representation by including the Petit-Saut dam area in the category forest land converted to wetlands.

CO_2 emissions from agricultural lime application

100. The ERT notes that France has reported CO_2 emissions from dolomite for both cropland and grassland as "NO" in CRF table 5(IV). In response to a question raised by the ERT during the review, the Party clarified that in France data on lime application is available by type of product, that the calculation has been made for each product type and that the estimates are aggregated and reported under limestone. Dolomite amendments are included in the French inventory with the default EF from the IPCC good practice guidance for LULUCF (pages 3.80 and 3.115), 0.12 t C/t dolomite. The ERT recommends that the Party increase the comparability of its estimates by reporting separately emissions from limestone, from dolomite and from other carbonated amendments, and by reporting in the NIR all information needed to ensure the transparency of the estimates, including background data and equations applied. The ERT also recommends that France use the CO_2 EF for dolomite from the stoichiometric reaction (0.13 t C/t dolomite) instead of the default value from the IPCC good practice guidance for LULUCF.

F. Waste

1. Sector overview

101. In 2011, emissions from the waste sector amounted to 12,785.18 Gg CO_2 eq, or 2.6 per cent of total GHG emissions. Since 1990, emissions have increased by 1.2 per cent. The key drivers for the rise in emissions are the increase in CH_4 emissions from landfills due to quantities of solid waste disposed on managed waste disposal sites, and the increase in CH_4 and N_2O emissions from other (waste: composting and production of biogas) due to an increase in compost and biogas production. Within the sector, 68.4 per cent of the emissions were from solid waste disposal on land, followed by 15.5 per cent from wastewater handling, 11.4 per cent from waste incineration and 4.7 per cent from other (waste).

102. The ERT noted that the NIR includes data and figures for which it is not clear whether they refer to the geographical coverage under the Convention or under the Kyoto Protocol (e.g. NIR figure 54, page 184). The ERT reiterates the recommendation made in the previous review report that France clearly specify when data and figures refer to the territories under the Convention or under the Kyoto Protocol.

103. The ERT noted that the sources of some country-specific parameters and historical data were not sufficiently documented in the NIR, for example the waste categorization and the composition of waste sent to solid waste landfills, and the figures for the amount of

waste sent to landfills. In response to questions raised by the ERT during the review, France provided further documentation (see paras. 105 and 106 below).

2. Key categories

Solid waste disposal on land – CH_4

104. France has used a tier 2 method (the first-order decay (FOD) model from the IPCC good practice guidance) to estimate CH_4 emissions from managed and unmanaged landfills. France has applied a combination of country-specific parameters (methane generation rate constant (k) and degradable organic carbon (DOC) value) and default IPCC parameters, including fraction of CH_4 in landfill gas and CH_4 oxidation factor. In response to a question raised by the ERT during the review, France provided the ERT with access to the spreadsheets used to implement the method, and the ERT concluded that the method was applied in line with the IPCC good practice guidance.

105. However, the ERT noted that the country-specific parameters were not transparently explained in the NIR, and that there was a lack of information on the waste categorization (rapidly degradable, moderately degradable or slowly degradable) and on the composition of waste sent to solid waste landfills. A short description of the survey used for the estimation of parameters (including the methane generation rate values) to model CH_4 emissions from French landfills on the basis of the FOD methodology and the CH_4 generation potential are presented on page 187 of the NIR. In response to a question raised by the ERT during the review, France provided improved documentation to the ERT on the country-specific parameters and waste composition, including the composition of the different waste categories used to derive DOC values. The ERT reiterates the recommendation made in previous review reports that France include this documentation of country-specific parameters (methane generation rates and DOC values) and waste composition in the NIR.

106. According to the information provided in the NIR (page 181), figures for the amount of waste sent to landfill are collected by surveys conducted every two years. However, it was not clear from the NIR when the first surveys were conducted and how data between surveys and historical data back to 1960 were interpolated or extrapolated. In response to questions raised by the ERT during the review, France clarified that in the period 1960–1974 annual data concerning municipal solid waste were provided by ADEME and the assimilated data were estimated on the basis of the 1976/1975 level. For the 1975–1979 period annual data concerning municipal solid waste were provided by ADEME. For 1980–1994, surveys were made approximately every five years by ADEME (in 1980, 1985, 1989, 1993); for 1995–2000, surveys were made every year; and for 2001–2008 every two years. For years without a survey, data were estimated by linear interpolation. The ERT reiterates the recommendation made in the previous review report that France include this information in its NIR.

Wastewater handling – N_2O

107. France applied the default method and EFs from the Revised 1996 IPCC Guidelines (NIR page 190, section 8.3.2.) and country-specific data on protein consumption and the efficiency of the treatment plants to estimate N_2O emissions from human sewage. In the NIR the source of data on protein consumption per capita is not presented. In response to a question raised by the ERT during the review, the Party explained that the calculation was elaborated with FAOSTAT data on protein consumption. The ERT noted that the last updated data on protein consumption in FAOSTAT are for 2009 and for the years 2010 and 2011 the same protein consumption value of 40.223 kg/person/year was used. The ERT recommends that France include the additional information regarding the source of data and

encourages the Party to investigate the possibility to use the national statistical data on protein consumption.

Waste incineration – CO_2

108. The NIR (part 1, energy chapter, page 92) indicates that municipal waste going to incineration (with and without energy recovery) has a constant biogenic share (58 per cent) since 2007 (see para. 39 above). However, in CRF table 6.C, the IEF for CO_2 emissions (e.g. 933.03 kg CO_2/t waste in 2011) from municipal waste going to incineration is not constant in the period 2007–2011: it decreases linearly in the period from 2007 to 2009 and remains constant after 2009, which is inconsistent with the information included in the NIR. Furthermore, in the NIR, part 2, page 302, the IEF (933.03 kg CO_2/t waste in 2011) is identified as the EF for total carbon content in municipal waste going to incineration and the EF for fossil carbon content is 392 kg CO_2/t waste. There is no justification in the NIR or the CRF tables for the use of the CO_2 EF for total carbon instead of the factor for fossil carbon. The ERT noted that the use of the EF for total CO_2 content in municipal waste may lead to an overestimation of CO_2 emissions, as only non-biogenic CO_2 emissions should be reported in this subcategory (other non-biogenic) and the CO_2 emissions from biogenic carbon should be reported in the biogenic subcategory (and not included in the total emissions). The ERT considers that there are inconsistencies in the information in the NIR and between the NIR and the CRF tables, and that the transparency is limited. The ERT recommends that France address these inconsistencies and present detailed information on the AD and EF used in the estimation of emissions.

G. Supplementary information required under Article 7, paragraph 1, of the Kyoto Protocol

1. Information on activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

Overview

109. Table 6 provides an overview of the information reported and parameters selected by the Party under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

Table 6
Supplementary information reported under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

		Findings and recommendations
Has the Party reported information in accordance with the requirements in paragraphs 5–9 of the annex to decision 15/CMP.1?	Not sufficient	See paragraphs 113–116
Identify any elected activities under Article 3, paragraph 4, of the Kyoto Protocol	Activities elected: forest management Years reported: 2008–2011	Information provided did not cover the entire forest area. See paragraphs 119–121
Identify the period of accounting	Annual accounting	
Assessment of the Party's ability to identify areas of land and areas of land-use change	Sufficient	

110. The ERT noted that:

(a) Data reported for forest management across KP-LULUCF CRF tables NIR-2 are inconsistent: for example, France reported: 21,640.59 kha at the end of 2008, but 21,642.71 kha at the beginning of 2009; 21,595.69 kha at the end of 2009 but 21,597.24 kha at the beginning of 2010; and 21,566.77 kha at the end of 2010 but 21,568.33 kha at the beginning of 2011;

(b) The total area of managed forest land in 2011 reported in CRF table 5.A, 22,843.14 kha, does not match the total area reported under forest management and afforestation and reforestation in 2011 in CRF table NIR-2, 22,778.59 kha;

(c) For the year 2009, the area reported for forest land converted to cropland (deforestation) in CRF table 5(KP-II)3, 620.85 kha, does not match the area reported in CRF tables 5.B and 5(III), 135.93 kha.

111. The ERT reiterates the recommendation made in the previous review report that France address these inconsistencies and improve its QA/QC procedures to minimize the inconsistencies of the information reported in the CRF tables, the KP-LULUCF CRF tables and in the NIR. The ERT also recommends that the Party include a description of its QC procedures for the KP-LULUCF sector, including information on the member of staff responsible for performing each procedure and the overall QC.

112. The ERT notes that France did not report information, as requested by decision 15/CMP.1, on the onset of the activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol when these activities started after 2008. The ERT strongly recommends that the Party provide information on the onset of each activity. The Party may consider it appropriate to report information consistent with that reported in the annual submission of the European Union (EU).

113. The ERT notes that France did not report information, as requested by decision 15/CMP.1, that demonstrates that activities under Article 3, paragraph 4, of the Kyoto Protocol are taking place since 1 January 1990 and that they are human-induced. The ERT strongly recommends that the Party provide information demonstrating that these activities take place since 1 January 1990 and that they are human-induced. The Party may consider reporting information consistent with that reported in the annual submission of the EU.

114. The ERT notes that France did not report the uncertainty analysis of the estimates for KP-LULUCF activities. In response to a question raised by the ERT during the review, the Party stated that an ongoing study on forest projections, launched in 2013 by MEDDE, aims at estimating uncertainties under both the Convention and the Kyoto Protocol. The ERT recommends that the Party report a complete uncertainty analysis of the estimates for KP-LULUCF activities.

115. Similar to the problem described for the LULUCF sector (see paras. 85 and 95 above), the ERT noted a general problem of the transparency of the estimates for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol. The ERT notes that transparency is the foundation on which any review is built, and that there are no circumstances that may justify the lack of transparency of a country report and therefore strongly recommends that France ensure transparency of the information for the estimates for these activities.

Activities under Article 3, paragraph 3, of the Kyoto Protocol

Afforestation and reforestation – CO_2

116. France reported in the NIR that it decided, on the basis of the definition provided in the annex to decision 16/CMP.1, that areas of afforestation and reforestation due to the increase of agricultural abandonment are to be considered areas afforested/reforested, to the extent that such land becomes managed forests; although forest areas in wetlands and other lands are excluded. Information provided in the NIR is aimed at demonstrating that these transitions result from policy decisions, and therefore can be considered direct human-induced transitions. The ERT recommends that France increase the transparency of the explanations in relation to this issue, including an analysis of all European, national and regional legislation related to vegetation protection, planting and general uses of land. The analysis should demonstrate that the natural seed sources from which the forest cover originates were protected, which means that regardless of whether or not there is a decision to convert a specific piece of land, the conversion occurred because of the protection of woody vegetation (otherwise, fires, grazing animals, or landowners may have caused the prevention of the vegetation evolving until it meets the forest definition). The ERT notes that such demonstration is not needed for planted areas.

117. The ERT noted that France assumes that forest fires do not occur (reported as "NO" in KP-LULUCF CRF table 5(KP-II)5) in the forest areas subject to forest management ("forest management") and afforestation and reforestation ("AR") in the overseas territories (namely Guyane, Martinique, La Réunion and Guadeloupe). The ERT also noted that, in 2011, the forest area of overseas territories spans 8,197.88 kha (35 per cent of the total forest area of the Party). The ERT considered that assuming that forest fires do not occur without providing information that demonstrates that indeed no fires occurred is not consistent with the IPCC good practice guidance for LULUCF. Further, according to the IPCC good practice guidance for LULUCF, CO_2 emissions from forest fires can be excluded from reporting if also subsequent CO_2 removals are excluded; such exclusion does not apply to emissions of non-CO_2 gases. In response to a question raised by the ERT during the review, France submitted unofficial revised estimates for GHG emissions from forest fires in La Réunion, providing some information on the fact that those emissions are negligible for Guyane, Martinique and Guadeloupe. The ERT recommends that France update its estimates by using the new information submitted during the review. For Guyane, Martinique and Guadeloupe, the ERT recommends that France revise its current information on forest fires and either report GHG emissions (or confirm that fires do not occur) or, limited to CO_2 emissions, exclude subsequent CO_2 removals. The ERT noted that France may consider the possibility to use the information on area burnt for Guyane in the Global Fire Emissions Database.[18]

Deforestation – CO_2

118. As indicated in paragraph 89 above, France assumed that there are no organic soils in its territory. However, evidence from international databases shows that in the metropolitan territory and in the overseas territories organic soils are present. Therefore, the ERT recommends that France assess the presence of organic soils in the deforested areas and apply the appropriate methodology for estimating carbon stock changes in soil organic matter for deforestation.

[18] <http://www.globalfiredata.org/>.

Activities under Article 3, paragraph 4, of the Kyoto Protocol

Forest management – CO_2, CH_4 and N_2O

119. Although France considers all forest land in Guyane, and all other overseas territories, as subject to forest management, 5 per cent of the forest land in the metropolitan territory is considered unmanaged because it is difficult to access and, therefore, excluded from the forest management reporting (see para. 91 above). The ERT notes that, according to the IPCC good practice guidance for LULUCF, the Party should define which practices/activities are part of the forest management system and accordingly identify forest land subject to forest management across the entire national territory without any further discrimination. The ERT further notes that France is excluding some forests from forest management on the basis of their difficult accessibility and that in Guyane there are forest areas which are far more difficult to access (and have not been accessed) but have been included under forest management. Therefore, by analogy with the treatment of forests in overseas territories, the ERT recommends that France report the entire forest area of the metropolitan territory under forest management, with the exception of forest land reported under afforestation and reforestation.

120. The ERT noted that France assumes that the forest areas subject to forest management in the overseas territories (namely Guyane, Martinique, La Réunion and Guadeloupe) have no annual net change in carbon stocks in the carbon pools (reported as "NO" in KP-LULUCF CRF table 5(KP-I)B.1). The ERT also noted that, in 2011, the forest area of overseas territories spans 8,197.88 kha (35 per cent of the total forest area of the Party). The ERT considers that assuming no net carbon stock change in living biomass is not consistent with the IPCC good practice guidance for LULUCF. The ERT also noted that:

(a) According to IPCC methodologies, the carbon balance of any pool, including living biomass, of unmanaged forests could be assumed to be in equilibrium where the impact of human disturbances is avoided;

(b) Primary forest, as defined by FAO, corresponds to unmanaged forests, providing human disturbances are avoided;

(c) Information that demonstrates that a carbon pool is not a source needs to be provided under the Kyoto Protocol when carbon stock changes from any carbon pool are not reported from areas reported under any activity under Article 3, paragraph 3 or 4, of the Kyoto Protocol.

121. During the review, the Party submitted unofficial revised estimates for carbon stock changes in forests under forest management in its overseas territories, which demonstrated that these forests under management are a net sink of CO_2. The ERT recommends that France either include those estimates, including any further revision, in its KP-LULUCF CRF tables and associated information in its NIR, or use those estimates to demonstrate that carbon pools in those lands are not a net source of CO_2 emissions.

2. Information on Kyoto Protocol units

Standard electronic format and reports from the national registry

122. France has reported information on its accounting of Kyoto Protocol units in the required SEF tables, as required by decisions 15/CMP.1 and 14/CMP.1. The ERT took note of the findings and recommendations included in the standard independent assessment

report (SIAR) on the SEF tables and the SEF comparison report.[19] The SIAR was forwarded to the ERT prior to the review, pursuant to decision 16/CP.10. The ERT reiterated the main findings and recommendations contained in the SIAR.

123. Information on the accounting of Kyoto Protocol units has been prepared and reported in accordance with decision 15/CMP.1, annex, chapter I.E, and reported in accordance with decision 14/CMP.1 using the SEF tables. This information is consistent with that contained in the national registry and with the records of the international transaction log (ITL) and the clean development mechanism registry and meets the requirements referred to in decision 22/CMP.1, annex, paragraph 88(a–j). The transactions of Kyoto Protocol units initiated by the national registry are in accordance with the requirements of the annex to decision 5/CMP.1 and the annex to decision 13/CMP.1. No discrepancy has been identified by the ITL and no non-replacement has occurred. The national registry has adequate procedures in place to minimize discrepancies.

Accounting of activities under Article 3, paragraph 3, of the Kyoto Protocol and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol

124. France has reported information on its accounting of KP-LULUCF in the accounting table, as included in the annex to decision 6/CMP.3. Information on the accounting of KP-LULUCF has been prepared and reported in accordance with decisions 16/CMP.1 and 6/CMP.3.

125. Table 7 shows the accounting quantities for KP-LULUCF as reported by the Party and the final values after the review.

Table 7

Accounting quantities for activities under Article 3, paragraph 3, and, if any, activities under Article 3, paragraph 4, of the Kyoto Protocol, in t CO_2 eq

	2013 submission[a]			*2010, 2011 and 2012 submissions*[b]	*Net accounting quantity*[c]
	As reported	*Revised estimates*	*Final*	*Final*	
Afforestation and reforestation	–31 403 444	–31 251 102	–31 251 102	–22 675 169	–8 575 933
Non-harvested land	–31 403 444	–31 251 102	–31 251 102	–22 675 169	–8 575 933
Harvested land	0		0	0	0
Deforestation	51 112 108	51 113 195	51 113 195	39 871 361	11 241 834
Forest management	–35 842 997	–35 995 426	–35 995 426	–33 329 526	–2 665 901
Article 3.3 offset[d]	–19 708 663	–19 862 093	–19 862 093	–17 196 192	–2 665 901
Forest management cap[e]	–16 133 333		–16 133 333	–16 133 333	0
Cropland management					
Grazing land management					
Revegetation					

[19] The SEF comparison report is prepared by the international transaction log (ITL) administrator and provides information on the outcome of the comparison of data contained in the Party's SEF tables with corresponding records contained in the ITL.

Abbreviations: CRF = common reporting format, KP-LULUCF = land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

[a] The values included under the 2013 submission are the cumulative accounting values for 2008, 2009, 2010 and 2011, as reported in the accounting table of the KP-LULUCF CRF tables for the inventory year 2011.

[b] The values included under the 2010, 2011 and 2012 submissions are the final accounting values as a result of the 2012 review and are included in table 6 of the 2012 annual review report (FCCC/ARR/2012/FRA, page 37) in the column "2012 annual submission", "Final".

[c] The "net accounting quantity" is the quantity of Kyoto Protocol units that the Party shall issue or cancel under each activity under Article 3, paragraph 3, and paragraph 4, if relevant, based on the final accounting quantity in the 2013 submission and where the quantities issued or cancelled based on the 2012 annual review report have been subtracted ("net accounting quantity" = final 2013 – final 2012 annual review report).

[d] "Article 3.3 offset". For the first commitment period, a Party included in Annex I to the Convention that incurs a net source of emissions under the provisions of Article 3, paragraph 3, of the Kyoto Protocol may account for anthropogenic greenhouse gas emissions by sources and removals by sinks in areas under forest management under Article 3, paragraph 4, up to a level that is equal to the net source of emissions under the provisions of Article 3, paragraph 3, but not greater than 9.0 megatonnes of carbon times five, if the total anthropogenic greenhouse gas emissions by sources and removals by sinks in the managed forest since 1990 is equal to, or larger than, the net source of emissions incurred under Article 3, paragraph 3.

[e] In accordance with decision 16/CMP.1, annex, paragraph 11, for the first commitment period only, additions to and subtractions from the assigned amount of a Party resulting from forest management under Article 3, paragraph 4, of the Kyoto Protocol after the application of decision 16/CMP.1, annex, paragraph 10, and resulting from forest management project activities undertaken under Article 6, shall not exceed the value inscribed in the appendix of the annex to decision 16/CMP.1, times five.

126. Based on the information provided in table 7 for the activity afforestation/reforestation, France shall issue 8,575,933 removal units (RMUs) in its national registry.

127. Based on the information provided in table 7 for the activity deforestation, France shall cancel 11,241,834 assigned amount units, emission reduction units, certified emission reductions units and/or RMUs in its national registry.

128. Based on the information provided in table 7 for the activity forest management, France shall issue 2,665,901 RMUs in its national registry.

Calculation of the commitment period reserve

129. France has reported its commitment period reserve in its 2013 annual submission. The Party reported its commitment period reserve to be 2,427,713,440 t CO_2 eq based on the national emissions in its most recently reviewed inventory (485,542.69 Gg CO_2 eq). The ERT notes that based on the submission of revised emissions estimates by France during the course of the review of the 2013 annual submission, the commitment period reserve for France changed, and the new commitment period reserve is reported as 2,436,060,154 t CO_2 eq. The ERT agrees with this figure.

3. Changes to the national system

130. France reported that there are changes in its national system since the previous annual submission but that the changes have been restricted to names of the institutions and on the composition of the GCIIE following restructuring of some of the member institutions. The ERT concluded that the Party's national system continues to be in accordance with the requirements of national systems outlined in decision 19/CMP.1.

4. Changes to the national registry

131. France reported that there are changes in its national registry since the previous annual submission. The changes resulted from the decision of the EU member States who are also Parties to the Kyoto Protocol (25) plus Iceland, Liechtenstein and Norway to operate their registries in a consolidated manner in the Consolidated System of EU Registries (CSEUR) operated by the European Commission. This implied changes

regarding the cooperation arrangement, the database structure and capacity of the national registry, on the conformance to technical standards, the procedures to minimize discrepancies, on security measures and on results of test procedures. The Party described the changes in its NIR.

132. The ERT noted that the SIAR identified that France is not fully reporting changes in the national registry related to changes of test results and changes of database structure. The ERT reiterated the recommendations made in the SIAR that, following major changes, the Party provide the results of the tests and demonstrate compliance with the data exchange standards and provide a data model which contains and describes all the entities required by the data exchange standards.

133. The ERT concluded that, taking into account the confirmed changes in the national registry, the Party's national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant decisions of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP). The ERT recommends that France include all other additional information in response to the SIAR findings in its NIR in accordance with decision 15/CMP.1, annex, chapter I.G.

5. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol

134. France did not provide information on changes in its reporting of the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol in its annual submission. However, the ERT identified that France has substantially updated its reported information, particularly with respect to the environmental labelling of products, choice criteria of clean development mechanism (CDM) projects (with the inclusion of three examples) and the financial support to developing countries (both bilateral and multilateral). The ERT concluded that, taking into account the confirmed changes in the reporting, the information provided is complete and transparent. The ERT recommends that France report any change(s) in its information provided under Article 3, paragraph 14, in accordance with decision 15/CMP.1, annex, chapter I.H.

135. The actions that France takes to minimize adverse impacts include: actions to improve capacity in developing countries, through transfer of technology and observation systems; establishing criteria for selecting biofuel sources and CDM project activities; and the environmental labelling of products. The NIR also includes a description of the financial support in the area of climate change as part of public aid (bilateral and multilateral) and outside of public aid.

III. Conclusions and recommendations

A. Conclusions

136. Table 8 summarizes the ERT's conclusions on the 2013 annual submission of France, in accordance with the guidelines for review under Article 8 of the Kyoto Protocol.

Table 8
Expert review team's conclusions on the 2013 annual submission of France

		Paragraph cross-references
The ERT concludes that the inventory submission of France is complete (categories, gases, years and geographical boundaries and contains both an NIR and CRF tables for 1990–2011)		
Annex A sources[a]	Complete	
LULUCF[a]	Not complete	86, 89
KP-LULUCF	Complete	
The ERT concludes that the inventory submission of France has been prepared and reported in accordance with the UNFCCC reporting guidelines	Yes	48, table 5
The submission of information required under Article 7, paragraph 1, of the Kyoto Protocol has been prepared and reported in accordance with decision 15/CMP.1	No	112, 113
France's inventory is in accordance with the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* and the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*	No	21, 47, 48, 73, 117, 119–121
France has reported information on Article 3, paragraphs 3 and 4, of the Kyoto Protocol	Yes	Table 6
France has reported information on its accounting of Kyoto Protocol units in accordance with decision 15/CMP.1, annex, chapter I.E, and used the required reporting format tables as specified by decision 14/CMP.1	Yes	
The national system continues to perform its required functions as set out in the annex to decision 19/CMP.1	Yes	
The national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant CMP decisions	Yes	132, 133
Did France provide information in the NIR on changes in its reporting of the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol?	No	134

Abbreviations: Annex A sources = sources included in Annex A to the Kyoto Protocol, CRF = common reporting format, CMP = Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, ERT = expert review team, IPCC = Intergovernmental Panel on Climate Change, KP-LULUCF = land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NIR = national inventory report, UNFCCC reporting guidelines = "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories".

[a] The assessment of completeness by the ERT considers only the completeness of reporting of mandatory categories (i.e. categories for which methods and default emission factors are provided in the Intergovernmental Panel on Climate Change (IPCC) *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, or the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*.

B. Recommendations

137. The ERT identified the issues for improvement listed in table 9. All recommendations are for the next annual submission, unless otherwise specified.

Table 9
Recommendations identified by the expert review team

Sector	*Category*	*Recommendation*	*Paragraph cross-references*
Cross-cutting	Recalculations	Complete CRF table 8(b) and improve the transparency of the reporting of recalculations	10, 12
	Consistency	Consistently report all the information in the NIR with respect to either the CRF tables under the Convention or the CRF tables under the Kyoto Protocol. When the information differs between the inventories, highlight this fact in the NIR and explain the difference transparently	11
	Transparency	Increase the transparency of its report by fully revising the NIR, by providing in its main body better descriptions of the methods used (clarifying the tier), the sources of data, EFs and the parameters used, as required by the method or approach selected; enhance France's national system so that it is able to address the reiterated recommendations made in this and previous review reports	13, 18
	Key-category analysis	Correct the information in CRF table NIR-3 and improve the description of the key-category analysis used	20
	Uncertainty analysis	Prepare and report the uncertainty analysis in accordance with the IPCC good practice guidance	21
Energy	Transparency	Provide in the NIR additional explanation on data sources and data aggregation; provide tables and graphs for data under the Convention and under the Kyoto Protocol; refer to the CRF tables submitted under the Kyoto Protocol or, when this is not the case, clearly indicate to which territorial aggregation the information refers	28
		Improve the transparency of its data by using the same units in the NIR as in the CRF tables	29
		In the CRF tables submitted under the Kyoto Protocol and in the NIR, state that the table in the NIR which shows the differences in the CO_2 emissions estimated following the sectoral and reference approaches refers to the CRF tables submitted under the Convention	31
	International statistics	Improve the description of differences between international data and data used in the inventory	33
	International bunker fuels	Improve the description of differences: between CRF tables 1.A(b) and 1.C regarding jet kerosene; and between IEA data and the data in the CRF tables regarding the split between international and domestic fuel use	34

Sector	*Category*	*Recommendation*	*Paragraph cross-references*
	Non-energy use of fuels	Improve the description of how non-energy fuel use is estimated; improve the transparency and completeness of CRF table 1.A(d)	36, 37
	Stationary combustion: gaseous fuels, biomass and other fuels – CO_2, CH_4	Correct the misallocation of CH_4 emissions in the period 1990–1993 between petroleum refining and fugitive emissions from natural gas and venting and explain any recalculations	38
		For public electricity and heat production, update the time series of the biogenic share of waste and explain any recalculations	39, 108
		For biomass use in agriculture/forestry/fisheries, explain the changes in fuel composition and resulting changes in IEFs	40
	Civil aviation: liquid fuels – CO_2, CH_4, N_2O	Ensure the consistency of the time series when using data from the EU ETS	41
	Road transportation: liquid and gaseous fuels – CO_2	Obtain country-specific values for the carbon content of the diesel oil and gasoline sold in France for the estimation of the relevant CO_2 emissions	42
		Describe the approach to estimate GHG emissions from gaseous fuels	43
	Oil and natural gas: CO_2, CH_4, N_2O	Describe how CO_2 and CH_4 emissions from oil transport are estimated	44
		Describe the changes in the estimation of fugitive emissions (CO_2, CH_4 and N_2O) from oil refining and storage	45
Industrial processes and solvent and other product use	Recalculations	Report clearly, at the subcategory level, the nature of the recalculations (changes of method, AD, EF, other), the years for which they were performed, the justification (as required by the IPCC good practice guidance) and a table with the impact of the recalculations at subcategory level for the entire time series	47
	Transparency	Continue to assess the distribution of information between the OMINEA report and the main body of the NIR, in order to enhance the transparency of its reporting. Specifically, for the industrial processes sector, add to chapter 4 and 5 of the NIR, where relevant, information on methodologies, EFs and sources of AD, as required by the IPCC good practice guidance and the UNFCCC reporting guidelines	48
	Consistency	Include, where applicable, information on how the consistency of the time series is ensured when different data sources or methodologies are used to estimate emissions for a category for different periods of time	49
	Transparency	Provide more detailed data on methodologies and data sources for AD and EFs used for reporting emissions, even for categories considered confidential by the Party	50

Sector	*Category*	*Recommendation*	*Paragraph cross-references*
	Cement production – CO_2	Complete the information on the methodological tiers used over time and data sources for all years, including the share of non-carbonate carbon and cement kiln dust in the IEF and assess time-series consistency due to the use of different methods and report on this assessment in the NIR	51
	Ammonia production – CO_2	Include additional information on methodologies and data sources	52
	Aluminium production – CO_2, PFCs	Complete the information on the methodological tiers and data sources for all years and describe how time-series consistency is ensured	53
		Reassess the confidentiality of the AD	54
		Explain the changes in the ratio of CF_4 to C_2F_6 emissions and in the methodologies applied to estimate emissions	55
	Consumption of halocarbons and SF_6 – HFCs and PFCs	Include in the relevant sections of the industrial processes chapter of the NIR more information on the recalculation for HFC emissions from refrigeration and air-conditioning equipment	56
		Include information on the methodologies, data sources for AD and EFs (default or country-specific EFs), recovery efficiency and other parameters used to estimate F-gas emissions; complete the missing information in CRF table 2.(II).F for the relevant subcategories	57
		For aerosols, include information on the data sources for AD for all years and improve the transparency of the methodology used	58, 59
		Explain the changes in the estimation of SF_6 emission from the category other (consumption of halocarbons and SF_6)	61
	Other (chemical industry) – CO_2	Provide more information on the EFs and AD used in the estimation of emissions from phthalic anhydride production	62
		Include key information on where and how feedstock uses of natural gas leading to CO_2 emissions are accounted for in the energy and industrial processes sectors	63
Agriculture	Transparency	Improve the transparency of the information on: the tier of the methodologies used; AD and EF uncertainties in enteric fermentation and manure management by providing at least the protocol used to obtain the expert judgement and the logical basis for the judgement, including any data taken into consideration	65, 66
	QA/QC	Apply and report on category-specific QC activities; report on the progress of the submission of the article on the country-specific methodology to develop the CH_4 EF for enteric fermentation for cattle to a peer-reviewed journal	67

Sector	*Category*	*Recommendation*	*Paragraph cross-references*
	Enteric fermentation – CH_4	Improve the transparency of the reporting of the country-specific methods to estimate EFs from cattle and for livestock other than cattle, including comparing these EFs with the EFs from the IPCC good practice guidance and reporting the results of this comparison	68, 69
		For livestock other than cattle, include sufficient and transparent explanations of the country-specific methodology and EFs	70
		Provide the value of the conversion factor of milk production from litres to kg and report the appropriate unit for milk production	71
		Improve the transparency of the reporting of the livestock population by indicating the geographical coverage of livestock population considered in the OMINEA report and in CRF table 4.A; and confirm that all emissions are reported in CRF table 4.A	72
	Manure management – CH_4, N_2O	Compare the estimated EF for cattle with the default EFs from the IPCC good practice guidance and describe the results in the NIR; for livestock other than cattle, develop country-specific VS values	73
		Improve the transparency of the information on typical animal mass (average) in the NIR and in CRF table 4.B(a).	74
		Report the methane conversion factors for both cold and warm climate in its NIR and explain why both are reported	75
		Improve the transparency in reporting the methodology used to estimate N_2O emissions	76, 77
	Agricultural soils – N_2O	Explain the changes in the estimation of N_2O emissions from imported manure; investigate the possibility that manure exchanges occurred in 2002–2011 with other countries in addition to that with Belgium	78
		Explain the changes in the estimation of N_2O emissions from histosols	79
		Improve the transparency of the information on the methodology used to calculate dry matter in agriculture residues	81
		Improve the transparency of its reporting of fraction of livestock nitrogen excreted and deposited onto soils by grazing livestock by providing the reference and background information of this parameter and ensure the consistency between the NIR and the CRF tables	82
	Field burning of agriculture residues – CH_4	Correct the information on the fraction of biomass oxidized and the percentage of carbon in agriculture residue dry matter	83

Sector	*Category*	*Recommendation*	*Paragraph cross-references*
LULUCF	Transparency	Use the NIR outline included in the UNFCCC reporting guidelines; include a section that provides all the information needed to demonstrate the consistency of information related to land representation; report for each IPCC category, and for each additional category, all the boundaries, definitions, methodologies, AD, EF, carbon stock changes, parameters and verification procedures	85
	Completeness	Increase the completeness of its reporting under the Convention by including all overseas territories	86
	Uncertainty analysis	Improve the transparency of reported information on uncertainty analysis by including an elicitation protocol for each expert judgement; derive uncertainty values from available datasets (such as the national forest inventory) to replace, as far as possible, expert judgements	87
	Transparency	For carbon stock changes: use "NO" only when the activity does not occur (instead of "0" (zero)); and, when the tier 1 methodology used assumes equilibrium of carbon stock, use "NE" and explain, in the documentation box of the appropriate CRF table and also in CRF table 9(a), that for the particular carbon stock change "NE" indicates that the tier 1 methodology is used; use "NE" when the carbon stock change is assumed to be negligible, instead of using the value 0, and explain, in the documentation box of the appropriate CRF table and also in CRF table 9(a), that for the particular carbon stock change "NE" corresponds to a negligible value	88
		Revise the information on the occurrence of organic soils for each land-use category and apply the most appropriate methodology for estimating the associated CO_2 emissions	89
	Forest land – CO_2	Assess whether the use of national forest inventory data for estimating carbon stock changes on the TERUTI forest area causes any systematic impact on the biomass carbon stock changes; and ensure the accuracy of those estimates	90
		Report the entire forest area of the metropolitan territory as managed	91
		Report emissions and removal estimates for carbon stock changes in overseas territories, including any further revisions, in the CRF tables and associated information in the NIR	93
		Report the scientific evidence and methodology applied for estimating the CH_4 sinks, including evidences that such natural CH_4 sink is not counted twice; if France intends to report such natural CH_4 sink, report the CH_4 sink and the CO_2 emissions associated with the consumption of CH_4 by bacteria in a table in the NIR instead of in the CRF tables	94

Sector	*Category*	*Recommendation*	*Paragraph cross-references*
		Enhance the explanation of the two methodologies used to estimate harvesting, including assumptions, inferences, parameters and ancillary data, and provide a quantitative assessment to demonstrate that the use of two different methodologies does not impact the consistency of the time series of the estimates	95
		Expand and improve the quality of the information reported on methods and data used for estimating gains and losses of living biomass in forest land	96
		Apply tier 2 methods for estimating all carbon stock changes in dead organic matter pools	97
	Cropland – CO_2	Report estimates for emissions and removals for living biomass of perennial crops for cropland remaining cropland and land converted to cropland, by applying at least a tier 1 methodology	98
	Forest land converted to wetlands – CO_2	Enhance the consistency of the land representation by including the Petit-Saut dam area	99
	CO_2 emissions from agricultural lime application	Increase the comparability of the estimates by reporting separately emissions from limestone, from dolomite and from other carbonated amendments, and by reporting in the NIR all information needed to ensure the transparency of the estimates; use the CO_2 EF for dolomite from the stoichiometric reaction (0.13 t C/t dolomite)	100
Waste	Transparency	Clearly specify when data and figures refer to the territories under the Convention or under the Kyoto Protocol	102
	Solid waste disposal on land – CH_4	Improve the transparency of the information on country-specific parameters and waste composition, including the composition of the different waste categories used to derive degradable organic carbon values	105
		Improve the transparency of the information on the amounts of waste sent to landfill	106
	Wastewater handling – N_2O	Improve the transparency of the information on protein consumption; investigate the possibility to use the national statistical data on protein consumption	107
	Waste incineration – CO_2	Address the inconsistencies on the biogenic share and the CO_2 EF; present detailed information on the AD and EF used	108
KP-LULUCF	QA/QC	Address the inconsistencies identified in the areas reported; include a description of its QC procedures for the KP-LULUCF sector	111

Sector	*Category*	*Recommendation*	*Paragraph cross-references*
	Transparency	Provide information on the onset of each KP-LULUCF activity; provide information demonstrating that these activities take place since 1 January 1990 and are human-induced; improve the transparency of the estimates	112, 113, 115
	Uncertainty analysis	Report a complete uncertainty analysis of the estimates for KP-LULUCF activities	114
	Afforestation and reforestation – CO_2	Increase the transparency of the explanations in relation to agricultural abandonment, including an analysis of all European, national and regional legislation related to vegetation protection, planting and general uses of land	116
		Update the emissions estimates for forest fires in overseas territories	117
	Deforestation – CO_2	Assess the presence of organic soils in the deforested areas and apply the appropriate methodology for estimating carbon stock changes in soil organic matter for deforestation	118
	Forest management – CO_2, CH_4, N_2O	Report the entire forest area of the metropolitan territory under forest management, with the exception of forest land reported under afforestation and reforestation	119
		For carbon stock changes in forests under forest management in its overseas territories, report estimates or demonstrate that carbon pools in those lands are not a net source of CO_2 emissions	121
National registry	General	Address the recommendations identified in the standard independent assessment report	122, 132
Article 3, paragraph 14	General	Provide information on changes in its reporting of the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol	134

Abbreviations: AD = activity data, C = carbon, CRF = common reporting format, EF = emission factor, EU ETS = European Union emissions trading system, F-gas = fluorinated gas, GHG = greenhouse gas, IEF = implied emission factor, IPCC = Intergovernmental Panel on Climate Change, IPCC good practice guidance = IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, KP-LULUCF = land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NE = not estimated, NIR = national inventory report, NO = not occurring, OMINEA = Organization and methodologies for the national inventory of atmospheric emissions, QA = quality assurance, QC = quality control, VS = volatile solids, UNFCCC reporting guidelines = "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories".

IV. Questions of implementation

138. No questions of implementation were identified by the ERT during the review.

Annex I

Background data on recalculations and information to be included in the compilation and accounting database

Table 10
Recalculations in the 2013 annual submission for the base year and the most recent year

Greenhouse gas source and sink categories	*1990*	*2010*	*1990*	*2010*	*Reason for the recalculation*
	Value of recalculation (Gg CO_2 eq)		*Per cent change*		
1. Energy	**2 303.93**	**3 048.67**	**0.6**	**0.8**	Changed AD and EF
A. Fuel combustion (sectoral approach)	2 054.45	3 044.33	0.6	0.8	
1. Energy industries	−505.52	−45.53	−0.8	−0.1	
2. Manufacturing industries and construction	2 555.50	917.48	3.0	1.3	
3. Transport	3.98	308.18	0.003	0.2	
4. Other sectors	0.49	1 864.20	0.0005	1.8	
5. Other					
B. Fugitive emissions from fuels	249.48	4.34	2.6	0.09	
1. Solid fuels					
2. Oil and natural gas	249.48	4.34	4.5	0.09	
2. Industrial processes	**111.17**	**103.26**	**0.2**	**0.3**	Changed AD and EF
A. Mineral products	81.69	0.77	0.5	0.006	
B. Chemical industry	−381.20	414.66	1.4	10.5	
C. Metal production	147.18	1 170.32	1.8	31.4	
D. Other production					
E. Production of halocarbons and SF_6		0.04		0.02	
F. Consumption of halocarbons and SF_6	263.50	1 482.53	17.4	8.5	
G. Other					
3. Solvent and other product use	**3.00**	**−130.39**	**0.1**	**−10.6**	Changed AD and EF
4. Agriculture	**−3 639.20**	**−3 005.92**	**−3.5**	**−3.2**	Changed methodologies, AD and EF
A. Enteric fermentation	139.22	99.42	0.5	0.3	
B. Manure management	−4 368.85	3 921.44	23.2	21.0	
C. Rice cultivation		−2.15		−2.0	
D. Agricultural soils	590.08	820.80	1.1	1.8	
E. Prescribed burning of savannas					

Greenhouse gas source and sink categories	*1990*	*2010*	*1990*	*2010*	*Reason for the recalculation*
	Value of recalculation (Gg CO_2 eq)		*Per cent change*		
F. Field burning of agricultural residues	0.34	2.54	0.6	7.4	
G. Other					
5. Land use, land-use change and forestry	**–3 403.64**	**–2 315.83**	**17.6**	**7.2**	Changed AD and EF
A. Forest land	–3 201.69	–2 120.26	9.4	4.0	
B. Cropland	–201.95	–195.57	–1.1	–1.2	
C. Grassland					
D. Wetlands					
E. Settlements					
F. Other land					
G. Other					
6. Waste	**–140.44**	**–6 569.37**	**–1.1**	**–33.3**	Changed AD and EF
A. Solid waste disposal on land	–139.88	–6 586.51	–1.6	–42.1	
B. Wastewater handling	1.28	–23.68	0.06	–1.2	
C. Waste incineration		5.61		0.4	
D. Other	–1.84	35.21	–2.1	6.3	
7. Other					
Total CO_2 equivalent without LULUCF	**–1 361.54**	**–6 553.74**	**–0.2**	**–1.3**	
Total CO_2 equivalent with LULUCF	**–4 765.18**	**–8 869.57**	**–0.9**	**–1.8**	

Abbreviations: AD = activity data, EF = emission factor, LULUCF = land use, land-use change and forestry.

Table 11

Information to be included in the compilation and accounting database in t CO_2 eq for 2011, including the commitment period reserve

	As reported	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Commitment period reserve	2 427 713 440	2 436 060 154		2 436 060 154
Annex A emissions for 2011				
CO_2	358 057 500	358 545 509		358 545 509
CH_4	51 084 998	51 093 556		51 093 556
N_2O	59 623 100	60 630 652		60 630 652
HFCs	15 801 540			15 801 540
PFCs	429 461			429 461
SF_6	546 088	711 312		711 312
Total Annex A sources	485 542 688	487 212 031		487 212 031
Activities under Article 3, paragraph 3, for 2011				
3.3 Afforestation and reforestation on non-harvested land for 2011	-8 414 489	-8 375 869		-8 375 869
3.3 Afforestation and reforestation on harvested land for 2011				
3.3 Deforestation for 2011	11 240 746	11 245 113		11 245 113
Activities under Article 3, paragraph 4, for 2011[c]				
3.4 Forest management for 2011	-56 546 162	-56 465 044		-56 465 044
3.4 Cropland management for 2011				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2011				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2011				
3.4 Revegetation in the base year				

Abbreviation: Annex A sources = sources included in Annex A to the Kyoto Protocol.

[a] "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).

[b] "Final" includes revised estimates, if any, and/or adjustments, if any.

[c] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 12
Information to be included in the compilation and accounting database in t CO_2 eq for 2010

	As reported	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Annex A emissions for 2010				
CO_2	386 528 950	387 017 456		387 017 456
CH_4	52 370 392	52 378 512		52 378 512
N_2O	59 129 419	60 092 942		60 092 942
HFCs	15 124 062			15 124 062
PFCs	382 911			382 911
SF_6	664 288	866 187		866 187
Total Annex A sources	514 200 022	515 862 068		515 862 068
Activities under Article 3, paragraph 3, for 2010				
3.3 Afforestation and reforestation on non-harvested land for 2010	–8 038 547	–8 006 401		–8 006 401
3.3 Afforestation and reforestation on harvested land for 2010				
3.3 Deforestation for 2010	11 178 380	11 177 268		11 177 268
Activities under Article 3, paragraph 4, for 2010				
3.4 Forest management for 2010	–46 684 651	–46 675 336		–46 675 336
3.4 Cropland management for 2010				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2010				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2010				
3.4 Revegetation in the base year				

Abbreviation: Annex A sources = sources included in Annex A to the Kyoto Protocol.
[a] "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).
[b] "Final" includes revised estimates, if any, and/or adjustments, if any.
[c] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 13
Information to be included in the compilation and accounting database in t CO_2 eq for 2009

	As reported	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Annex A emissions for 2009				
CO_2	378 751 371	379 178 182		379 178 182
CH_4	52 398 856	52 406 227		52 406 227
N_2O	61 311 335	62 261 575		62 261 575
HFCs	14 339 147			14 339 147
PFCs	365 349			365 349
SF_6	710 628	931 051		931 051
Total Annex A sources	507 876 684	509 481 530		509 481 530
Activities under Article 3, paragraph 3, for 2009				
3.3 Afforestation and reforestation on non-harvested land for 2009	−7 698 684	−7 633 571		−7 633 571
3.3 Afforestation and reforestation on harvested land for 2009				
3.3 Deforestation for 2009	13 898 074	13 896 914		13 896 914
Activities under Article 3, paragraph 4, for 2009[c]				
3.4 Forest management for 2009	−53 711 500	−53 775 134		−53 775 134
3.4 Cropland management for 2009				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2009				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2009				
3.4 Revegetation in the base year				

Abbreviation: Annex A sources = sources included in Annex A to the Kyoto Protocol.
[a] "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).
[b] "Final" includes revised estimates, if any, and/or adjustments, if any.
[c] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 14
Information to be included in the compilation and accounting database in t CO_2 eq for 2008

	As reported	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Annex A emissions for 2008				
CO_2	397 341 641	397 816 119		397 816 119
CH_4	53 657 381	53 666 154		53 666 154
N_2O	65 247 717	66 202 737		66 202 737
HFCs	13 554 282			13 554 282
PFCs	563 098			563 098
SF_6	854 546	1 091 220		1 091 220
Total Annex A sources	531 218 665	532 893 610		532 893 610
Activities under Article 3, paragraph 3, for 2008				
3.3 Afforestation and reforestation on non-harvested land for 2008	−7 251 725	−7 235 261		−7 235 261
3.3 Afforestation and reforestation on harvested land for 2008				
3.3 Deforestation for 2008	14 794 907	14 793 900		14 793 900
Activities under Article 3, paragraph 4, for 2008[c]				
3.4 Forest management for 2008	−63 630 549	−63 645 239		−63 645 239
3.4 Cropland management for 2008				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2008				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2008				
3.4 Revegetation in the base year				

Abbreviation: Annex A sources = sources included in Annex A to the Kyoto Protocol.
[a] "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).
[b] "Final" includes revised estimates, if any, and/or adjustments, if any.
[c] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Annex II

Documents and information used during the review

A. Reference documents

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B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Frédérique Millard (General Directorate for Energy and Climate, Ministry of Ecology, Sustainable Development and Energy), including additional material on the methodologies and assumptions used.

Annex III

Acronyms and abbreviations

AD	activity data
C	carbon
"C"	confidential
C_2F_6	hexafluoroethane
CDM	clean development mechanism
CF_4	tetrafluoromethane
CH_4	methane
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CRF	common reporting format
DOC	degradable organic carbon
EF	emission factor
ERT	expert review team
EU	European Union
EU ETS	European Union emission trading system
FAO	Food and Agriculture Organization of the United Nations
FOD	first order decay
F-gas	fluorinated gas
GHG	greenhouse gas; unless indicated otherwise, GHG emissions are the sum of CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 without GHG emissions and removals from LULUCF
GJ	gigajoule (1 GJ = 10^9 joule)
ha	hectare
HFCs	hydrofluorocarbons
IEA	International Energy Agency
IEF	implied emission factor
IPCC	Intergovernmental Panel on Climate Change
ITL	international transaction log
kg	kilogram (1 kg = 1,000 grams)
kha	kilohectare
KP-LULUCF	land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol
LULUCF	land use, land-use change and forestry
MCF	methane conversion factor
Mg	megagram (1 Mg = 1 tonne)
N_2O	nitrous oxide
NA	not applicable
NE	not estimated
NFI	national forest inventory
NIR	national inventory report
NO	not occurring
PFCs	perfluorocarbons
PJ	petajoule (1 PJ = 10^{15} joule)
QA/QC	quality assurance/quality control
RMU	removal unit
SEF	standard electronic format
SF_6	sulphur hexafluoride

SIAR	standard independent assessment report
TJ	terajoule (1 TJ = 10^{12} joule)
UNFCCC	United Nations Framework Convention on Climate Change
VS	volatile solids